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ON THE PREPARATION OF LIQUID PEPSIN.

By Emil Scheffer, of Louisville, Ky.

At the suggestion of a physician to make a preparation of Pepsin from the stomach of the pig, I was induced to make a variety of experiments, which I wish to bring to the notice of the readers of this Journal, and particularly those of the medical profession.

Throughout my experiments I employed the finely-chopped mucous membrane, which I dissected from fresh, well cleaned pig's stomach. The first experiment was made by macerating the membrane with water, straining off the liquid, adding hydrochloric acid and subsequently glycerin, the latter partly to give it consistence, but principally on account of its antiseptic properties. The experiment was repeated a number of times, changing the proportions of membrane and menstruum; but it was found that by maceration with water alone too much mucus was dissolved, so that the liquid became quite gelatinous and did not clear itself, and therefore this process was abandoned. I next macerated the membrane in water, acid and glycerin mixed together, and obtained a preparation from which, on standing a few days, the mucus held in suspension was precipitated and was entirely separable by filtration, forming a clear liquid. At the same time the preparation loses a peculiar disagreeable odor, which seems to be characteristic of the mucus. This odor seems to be developed during the maceration of the membrane, as the fresh stomach does not possess more odor than fresh pork, and that this odor is peculiar to the mucus is evinced by the

liquid losing it in the same degree as the mucus precipitates. Upon these and subsequent experiments I have based the following formula for

Liquid Pepsin.

6 pounds mucous membrane of hogs' stomach are macerated in a mixture of
4 pounds glycerin,
4 pints water and
6 ounces of pure hydrochloric acid,

for thirty-six hours, after which the mass is put on a strainer, and when the liquid has drained, the membrane is macerated again with three pints of water for two or three hours, then strained, and this proceeding repeated with smaller quantities of water until ten pints of liquid are obtained.

The resulting liquid will be found mucilaginous, very turbid and of a strong disagreeable odor. After standing a few days, however, the liquid becomes limpid, a precipitate of mucus forms and, by filtration, a clear light straw-colored liquid is obtained, possessing a faint and disagreeable odor. Liquid Pepsin, properly prepared according to the above formula, is of such strength that one fl. oz., is capable of dissolving one and a half drachms of coagulated albumen, which of all albuminous and fibrinous substances I considered the best adapted for ascertaining the strength of an artificial gastric juice. This test was made by adding coagulated albumen, cut into small cubes, to one fluid-ounce of liquid Pepsin, keeping the fluid at a temperature of one hundred to one hundred and five degrees, and shaking it from time to time, until the albumen was dissolved. By repeated experiments with at first smaller quantities I found that one and a half drachms of coagulated albumen will dissolve in one fluid-ounce of liquid Pepsin in from four to six hours. Care must be taken in conducting this test, that the temperature does not rise much higher than 105°, which in all probability would injure the solvent power of Pepsin, and when heated to the temperature of boiling water I have found it, by actual experiment, to lose all action on albumen. I would here remark, that albumen boiled two days before its use for experiments was dissolved much slower than when freshly coagulated. Being now

fully satisfied that the Liquid Pepsin had digestive power, that is, that it contains Pepsin, I undertook to examine some of the Pepsins and preparations of Pepsin usually found in our market, in order to compare their solvent power upon albumen with that of my own preparation. In order to control the experiments, and to prevent errors from the difference in solubility of coagulated albumen boiled at different times, I accompanied each experiment with a proof test. This consists in exposing one and a half drachms of coagulated albumen to the action of one fluid-ounce of my liquid Pepsin simultaneously with the other Pepsins, subjecting thereby each fluid to the same temperature, and shaking one vial as often as the other one, until the albumen in my Pepsin was dissolved. This period I shall call "the end of the process."

Wine of Pepsin, prepared from the mucous membrane of the pig's stomach with sherry wine, was first tested. One drachm of coagulated albumen was subjected to the action of one fluid-ounce of Wine of Pepsin.

The albumen did not dissolve, seemed on the contrary to get more compact, and the wine kept clear, while by all other experiments, where solution of albumen takes place, the fluid becomes turbid.

At the end of the process the albumen was taken out of the wine, washed with water, dried on filtering paper and then weighed. The one drachm had lost only fifteen grains, which loss I do not consider as having been dissolved, as the albumen was firmer than before it was put into the wine, and felt like soft india-rubber between the fingers. I am confident that the loss is owing to water, which the albumen lost by the process. To determine whether the alcoholic strength of the Wine of Pepsin prevents the solution of albumen, the foregoing experiment was repeated, with the difference that one fluid-ounce of the wine was diluted with its volume of distilled water, but the result was precisely the same.

The same result was obtained with another portion of my own Wine of Pepsin, with Wine of Pepsin prepared by a friend, with Wyeth's Wine of Pepsin and with Wyeth's Elixir of Pepsin.

A fresh portion of mucous membrane was now extracted with

sherry wine by maceration for eight days, after which time the membrane was removed and employed to prepare liquid Pepsin according to the formula given above. The resulting preparation was found capable of dissolving one drachm of coagulated albumen, rendering it evident that wine had taken up little or none of the active principle of the mucous membrane.

By making the Wine of Pepsin the mucous membrane does not swell up, as this is the case when liquid Pepsin is made; on the contrary it seems to contract; therefore I believe that the alcohol in the wine coagulates the albuminous substances of the membrane. The quantity of alcohol in sherry wine seems likewise sufficient to prevent the Pepsin from being dissolved. To prove this assertion I added to one fluid-ounce of liquid Pepsin a mixture of half a fluid-ounce of alcohol and one and a half fluid-ounces of distilled water, thus forming a liquid containing sixteen per cent.of alcohol, about the percentage of good sherry wine; which mixture, at first quite clear, became after a short time opalescent, cloudy, and after thirty six hours flakes of Pepsin had separated. The flakes were collected on a filter, drained, then dissolved in water acidulated with muriatic acid, and with a certain quantity of coagulated albumen exposed to a temperature of 105°. This experiment was controlled by another one, in which the same quantity of albumen was added to the same quantity of water and muriatic acid. After several hours, at least three-fourths of the albumen in the experiment which contained the flakes had disappeared, while in the other one the albumen was not acted upon, thus proving beyond doubt that the flakes were indeed Pepsin.

After these experiments I do not hesitate to say, that the so-called Wine of Pepsin does not contain any Pepsin at all, and that all the medical virtue of it has to be attributed to the wine itself.

Boudault's French Pepsin.

A. To one-half drachm mixed with one fluid-ounce of water was added one drachm coagulated albumen.

B. To one-half drachm mixed with one fluid-ounce of water and fifteen drops of pure muriatic acid, was added one drachm coagulated albumen.

At the end of the process the undissolved albumen was taken out, washed and dried from adhering water on bibulous paper, and then weighed.

A. had lost twenty-four grains.

B. had lost twenty-seven grains.

That in these two cases a solution of albumen had taken place was plainly seen, as the remaining albumen was quite soft and by the least pressure formed a pulpy mass.

Houghton's Dry Pepsin—made from calf rennet.

α. One drachm of Pepsin, one fluid-ounce of water, and one drachm of coagulated albumen.

β. One drachm of Pepsin, one fluid-ounce of water, fifteen drops of muriatic acid and one drachm of coagulated albumen.

At the end of the process,

α had lost nothing; the consistence of the albumen was about the same as before it was put into the solution.

β had lost ten grains.

The remaining albumen was somewhat softer but not as pulpy as by the French Pepsin.

Hawley's Liquid Pepsin. Of one and a half drachms of coagulated albumen, which were put to one fluid-ounce of this preparation, at the end of the process one drachm and ten grains were undissolved, but it showed itself considerably softened.

According to these experiments, one fluid-ounce of liquid Pepsin would be equal in strength to one drachm and forty grains of Boudault's French Pepsin, to nine drachms of Houghton's dry Pepsin, and to four and a half fluid-ounces of Hawley's liquid Pepsin.

The various wines which were tested cannot be classified with the Pepsin preparations, as they evidently contain no Pepsin.

So far the experiments about my preparation proved satisfactory, but the question had to be answered yet, if in course of time, particularly in warm weather, the liquid Pepsin does not undergo any decomposition and thereby lose some of its medical virtue? To find this out, a vial with liquid Pepsin was placed in the neighborhood of the warm stove for five weeks and then examined again. The external appearance was entirely

the same; the color only seemed to have become a little lighter, the odor had entirely disappeared, and, by testing for its strength, the result showed that it had lost none, as one fluid-ounce dissolved still one a half drachms of coagulated albumen.

Before concluding, some remarks on the proper form of exhibiting liquid Pepsin may not be out of place. Some physicians and druggists to whom I have spoken, expressed themselves in favor of elixir or wine, believing it would thereby be more pleasing to the palate. That the liquid Pepsin prepared in the above way is a clear liquid, not objectionable to the eye or palate, I have related above; and the faint odor which it has when first prepared is so trifling, that those who are compelled to take such a medicine do not care for, when they find relief by it. A physician may add something to it to change the color and taste whenever he prescribes it, and in this case I would suggest some aromatic syrup; but to add alcohol to it and make it up in form of an elixir, I am, by my experiments, utterly opposed to. A medicine pleasing to the eye and agreeable to the palate is no doubt more acceptable to the patient, but when, as in many cases, the real value of a medicine has to be sacrificed to the external appearance, it ought to be discountenanced.

Louisville, Ky., January, 1870.

NOTICE OF M. CARRE'S APPARATUS FOR MAKING ICE.

By the Editor.

A few weeks since we had the pleasure of visiting this apparatus in full operation at the machine works of Messrs. I. P. Morris & Co., of Philadelphia, where this firm have erected it under the supervision of the American representative of the patentee, Mr. Bujac, of New York. It will be recollected by some of our readers that M. Carré's invention consists in the use of ammoniacal gas liquified by pressure, as his agent for freezing water, which it does by abstracting and rendering latent the heat of the water necessary to its liquid condition. The manner of using the ammonia to effect this purpose is exceedingly ingenious, and apparently paradoxical, inasmuch as heat is applied to produce cold; and this is the chief claim of originality made

by the patentee, who also claims the application of the power of absorption due to mutual affinity as a means of producing vacuo, volatilization, the removal of heat, and the consequent production of cold. This machine is called "Jack Frost, Jr."

Although the apparatus is complex, it does its work well, and makes three tons of ice per day when in constant operation. Without an outline engraving it will be impossible to convey to the reader a correct idea of its details, involving as they do much tubing; yet we will endeavor to describe its principal features. It may be premised that the form of ammonia used is the concentrated aqua ammoniæ, containing 26 per cent. of gaseous ammonia, and that there is a constant pressure in the apparatus when in full operation of about 200 pounds to the square inch, or thirteen atmospheres.

The apparatus consists (1) of a cylindrical, dome-topped, vertical *boiler*, about 9 feet high and 2½ in diameter, into which 250 gallons of the ammonia are introduced, part of which enters the exchanger, the complement and the absorption vase, to be described. A large tube issuing from the dome connects it with (2) the *liquefactor*, which is an extensive series of connected, nearly horizontal tubes, contained in a sheet-iron tank filled with cold running water. In this the gas, under the great pressure and the cold, is liquefied, its latent heat being carried off by the cold water, whilst the liquid ammonia passes out at the lowest end by a small tube into (3) the *recipient*, where it collects. This vessel is connected by a tube with (4) the *distributing valve*, which distributes it, by means of six small tubes of 1-16th of an inch calibre, into six stacks of zig-zag tubes, contained in the *freezing cistern*. The freezing cistern consists of a wooden tank lined with iron, about five feet long, three wide, and three deep, in which are placed six lines of vertical zig-zag tubes above noticed, into which the liquefied ammoniacal gas enters from the distributing valve. Between these, forty-eight copper cans or freezers, filled with water, are placed, and the whole interior of the tank is filled with a bath of strong brine, or, preferably, solution of chloride of calcium, which is incapable of being frozen by the temperature produced, and is made to circulate between the tubes and freezing cans as a carrier of heat, by a stirring

apparatus. The stacks of zig-zags connect at bottom with a cylindrical vessel called *the collector*. When now the distributing valve is partially opened, the liquid ammonia is forced in due proportion into the zig-zag tubes, where it rapidly expands into gas by the assumption of the heat necessary for its vaporization from the surrounding brine, which in its turn abstracts the heat of the water in the cans (by virtue of which only it can retain its fluidity), and thus converts it into ice and accomplishes the chief purpose of the machine. But the apparatus, acting continuously, now gathers the resulting ammoniacal gas, redissolves it in the weak liquor of the boiler which it has previously abstracted and cooled, and then returns it to the boiler to be again deprived of its gas. This remarkable compound result is effected in this wise: The ammoniacal gas, after performing its office of rendering latent the sensible heat of the water, passes on first to the collector, and from this through a cooling tube to the *absorption vase* (which consists of a cylindrical vessel enclosing a tall coil of tube, through which passes a constant current of cold water), and there, after the machine has been working some time, it meets with the exhausted ammonia liquor, by which it is rapidly absorbed, and which thus regains its original strength. The manner in which the weak ammonia liquor reaches the absorption vase, and the regenerated liquor ammoniæ is returned to the boiler, all of which has to be effected under the heavy pressure of thirteen atmospheres, is as follows: By a syphon tube reaching to the bottom of the boiler the latter is connected with the double coil of the *exchanger*, which consists of a tall cylindrical iron vessel, about twenty inches in diameter. The lower end of the coil is connected with the lower end of another coil in a similar vessel beside it, called the *complement*, the upper end of which coil enters the absorption vase at the top, and descends nearly to the bottom. At first the boiler, exchanger, complement, and absorption vase are all charged with strong ammonia, but as soon as the heat under the boiler has driven off sufficient gas to create strong pressure, the weakened hot ammonia liquor is forced into the coil of the exchanger, where it is partially cooled by the cold ammonia of the absorption vase, which the pump has forced into the cylinder of the exchanger, ready to

replace the weak liquor in the boiler. The weak liquor is then perfectly cooled as it passes through the *complement* coil, which is surrounded by very cold water, and it enters the absorption vase, rapidly absorbing the gas entering from the collector, and reproducing aqua ammoniæ. Simultaneously the forcing pump of the machine is drawing the cool strong ammonia from the upper stratum in the absorption vase, and forcing it into the cylinder of the exchanger, where, after performing its office of cooling the weak liquor and becoming itself heated, it passes into the boiler near its top, impinging on a series of porous diaphragms of metal suspended in the upper part of the still, to facilitate the rapid separation of the gas a second time. Thus it is apparent that the same aqua ammoniæ may be used over and over again, to an extent only limited by the perfection of the joints under the great pressure constantly existing.

At starting the machine, all the cans are filled with pure water and closely covered with wooden lids, and when, after about four hours, they are frozen, the operator removes the ice from the *first*, *third*, *fifth*, *seventh*, &c., one every five minutes, until he has reached the *forty-seventh*, refilling each with water and returning it to its place as he goes, when he takes the series two, four, six, eight, ten, &c., to the forty-eighth, in the same way, when the other series is re-commenced, and so on day and night, making three tons every twenty-four hours. Mr. Bujac says that on the 24th of October, 1869, an experiment with this machine yielded 2204 lbs. in eight hours, with a gain of 11° C., the bath being 6° below zero C. at 8 o'clock, A. M., and 17° C. below zero at 4 o'clock, P. M.; and he thinks the product would reach 7000 to 7500 lbs. in twenty-four hours if the boiler and tubes were covered with felt. To remove the ice, the cans are dipped momentarily in hot water, and then inverted. The cakes are uniformly rectangular, and as their temperature when removed is far below 32° F., by simply moistening their surface they cement perfectly to each other, and form solid blocks of ice of any required dimensions.

Mr. Bujac had a shallow tank of wood, ten feet by thirty feet, arranged with a series of iron pipes just below the surface of the water it contained, when on attaching the machine the water was

frozen so that boys skated upon it. The idea of applying the machine to the reduction of the temperature of large rooms for brewers and others who need a moderate heat in their processes, is at present being studied practically. We understand a machine like the one described is worth $12,000, and when worked constantly will make about one thousand tons of ice per annum. Machines of ten tons per twenty-fours hours capacity are now at work in New Orleans, the price of which are $25,000.

Philadelphia, Feb. 10, 1870.

ON THE REACTION BETWEEN SPIRIT OF NITROUS ETHER AND BICARBONATE OF POTASSA.

By C. J. Rademaker, M. D.

Always preparing sweet spirits of nitre according to the process of the U. S. P. and keeping it standing on crystals of bicarbonate of potash, as first suggested by Mr. Harvey, of Leeds, I invariably observed a molecular change taking place in the crystals of bicarbonate of potash, without any perceptible solution taking place. The irregular eight-sided prisms of bicarbonate of potash gradually elongated themselves into needles about one inch in length. In order to find the cause of the molecular change, part of the crystals were collected on a filter, and washed with distilled water until all taste of nitrous ether was removed. The crystals were transferred to a beaker, and treated with concentrated sulphuric acid; which was attended with an evolution of a large quantity of gas, which became red fumes of hyponitric acid as they ascended.

From the above it will be seen that spirits of nitre will decompose bicarbonate of potash, with the formation of nitrite of potash, carbonic acid, and ether, without any perceptible solution taking place.

The ether with which the experiment was performed was perfectly neutral, as it had been distilled from bicarbonate of potash two and three times; for that reason no acidity could have been the cause of the decomposition. A solution of bicarbonate of potash added to one of spirits of nitre there is a ready decomposition, with the evolution of carbonic acid, formation of nitrite of potash and ether. Nitre, as prepared by some of our chemists

on a large scale, is made to pass through a solution of alkali kept at the same temperature as that of the retort in which the nitre is generated, in order to free it from aldehyd. To this is probably owing the small amount of nitrous ether found in the spirit of nitre of commerce.

Louisville, Jan. 30th, 1870.

NOTE ON AN IMPURITY IN TINCTURE OF CHLORIDE OF IRON.

By J. C. Wharton.

To the Editor of the American Journal of Pharmacy:

Dear Sir,—Some four or more years since I addressed to you an article upon the subject of muriated tincture of iron, and, if I mistake not, the same was published in the American Journal of Pharmacy for the month of November, 1865. I then made the statement that I had obtained a crop of singular crystals from a lot of the tincture. Since then I have seen nothing in any journal or circular that explained the production of the substance in question. I am glad to state that I have at last gained a clue to the subject, and will in the outset say that I am fully convinced that the crystals are derived from the *glass vessel* in which the solution of iron is effected. A small amount of the vessel is dissolved (either from glass or porcelain ware), and crystallizes out of the solution in the form of silky white needles of a lustre something like asbestos.

I must confess that soon after I made the announcement above mentioned, I was afraid that I had obtained the substance from some unknown and accidental impurity in the materials used, especially as I did not find it in another lot of tincture, neither could I find another druggist whose observations gave me any reason to believe that such a crystallization was at all common, —the reason for which I now comprehend, as the substance does not always appear in crystals, and sometimes not at all; but most frequently is left behind either in the filter or in the dregs from which the supernatant clear solution of sesquichloride of iron is drawn previous to the addition of the alcohol.

When it is to be found in the tincture at all, it is most apt to

be in the form of a yellowish precipitate at the bottom of the bottle containing it. This is the same, or a part of the precipitate called in the U. S. P. sesquioxide of iron; by some other authorities, a basic oxide or chloride of iron. I am not prepared to say that the precipitate commonly noticed in the tincture of iron, as obtained by the subcarbonate process, is not *sometimes* a pure sesquioxide of iron, occasioned, as stated in the U. S. P., by the change of a small amount of protochloride to sesquichloride and sesquioxide, the latter substance precipitating from a deficiency of acid. But I am satisfied that if much or prolonged heat is employed in dissolving the iron, the precipitate will not be a pure sesquioxide, but will contain an appreciable quantity of the substance obtained from the glass of the vessel used in the process. I feel sure that this peculiar substance exerts a notable influence in the formation of the well known precipitate, if it is not in reality the *cause* of it, as may be shown in one process of obtaining the crystals from the tincture of iron. To prove whether or not they were derived from the glass of the vessel, I made a gallon tincture of iron by the old U. S. P. process, adding to the subcarbonate of iron about three-fourths of an ounce of very finely pulverized glass, before introducing the muriatic acid. But to be plainer, I give it in the form of a recipe:

Take of	Subcarbonate of Iron,	12 troyounces.
	White Glass, in very fine powder,	6 drachms.
	Muriatic Acid (commercial),	2½ pints.
	Alcohol,	6 pints.

Introduce the subcarbonate of iron and glass into a flask, or any suitable vessel, and add the muriatic acid. After effervescence has subsided (or nearly so), place the vessel over a fire and boil gently until the liquid begins to be but slightly muddy-looking, or until the sesquioxide seems nearly dissolved. (It will not be clear.) Have the alcohol warmed, but not boiling, and mix both the liquids together well. Filter immediately through *white* filtering paper (made stronger than usual). Set the clear tincture aside for three or four days, that crystallization may take place. At the end of this time a quantity of small granular crystals will be found on the bottom and sides of the

bottle containing the tincture. Just at this point two modes of procedure may be adopted. First, the tincture may be decanted *clear* from the crystals, which may be then redissolved in a small amount of boiling muriatic acid, diluted with an equal measure of alcohol, filtered rapidly while hot, and set aside for crystallization; or secondly, the tincture may be heated by a water-bath to boiling, *without removing the granular crystals.* In this case a copious yellowish-brown precipitate will take place identical in appearance with the well known precipitate from tincture of iron as made from the subcarbonate. This precipitate may be collected and dissolved in boiling muriatic acid and alcohol as in the first manner, and set aside to cool and crystallize. Three or four ounces of the acid and alcohol will probably dissolve the greater part of the precipitate, but if much has formed it will take proportionally more. After crystallization has taken place they must be collected on a filter of white paper, and washed with a little diluted alcohol and rinsed with distilled water, when they may be dried in any convenient way.

The crystals may be made by the above recipe, omitting the subcarbonate of iron and acting on the glass alone, and proceeding exactly in the same way.

Having detailed the process of obtaining the above substance, a few remarks upon its properties will not be amiss.

There seem to be at least three modifications of it, or perhaps three different combinations of it with other substances.

First. The *granular* state,—the result of its primary crystallization from the fresh hot tincture after several days. (They begin to form as soon as the tincture cools.)

Second. The yellowish-brown precipitate obtained by boiling the tincture in contact with the first or granular crystals. This seems to be the same precipitate so often noticed in the tincture of iron. The action of the heat, and perhaps etherification, appears to accomplish in a few minutes what ordinarily takes weeks and months to do the same.

Third. The white, silky crystals, the most remarkable of all its forms, and about which the whole of this has been written. These crystals may be heated to dull redness, with but little change.

If placed in contact with the blue portion of any ordinary gas-jet, they will first shrink to about one-third of their bulk, from apparent fusion of the silky fibre. After a short time they begin to glow with dazzling brightness. A small cluster of the crystals should be stuck on the point of a common steel pen, and held *against*, but not *inside of*, the blue flame.

If decomposed by a boiling solution of potassa a precipitation occurs, and if muriatic (or perhaps any strong) acid is added, solution will be effected. Strong alkaline solutions will again precipitate, and acids dissolve, alternately for a great number of times.

Oxalic acid precipitates the solution last spoken of.

The color produced in a blue flame is reddish.

The crystals are sparingly soluble in cold water or dilute acids, quite soluble in strong hot muriatic acid. Tasteless before burning, but alkaline after having been in a strong heat.

In composition it is probably a silicate of lime (is it?).

Nashville, Tenn., Jan. 28, 1870.

OUR NEXT PHARMACOPŒIA.

By Hiram Van Sweringen, Fort Wayne, Ind.

Our Pharmacopœias and Dispensatories have, as a general thing, cautiously kept pace with the scientific progress of the age; and in tracing them from their origin to the present time, while it is gratifying to observe the gradual influence of knowledge in reducing the number of their articles,—simplifying the composition of their formula,—and improving the processes for their preparation, it seems necessary that considerable precaution should be exercised in reference to the *rapidity* with which such reduction is being made, a consideration of the position, merits and demerits, of those articles to be expelled and the reasons for their expulsion.

In Dr. E. R. Squibb's report as chairman of the committee upon the revision of our national Pharmacopœia, which was read in Chicago at the last meeting of the American Pharmaceutical Association, it appeared to me, that he made a furious attack at, and picked to pieces our present standard of medicinal prepara-

tions, upon no other reason than that many of them conflicted apparently with the progress of the science of chemistry to which, if I mistake not, he is mostly attached.

While it is very evident that chemistry has been the means of establishing the identity of many bodies which were long considered different, causing an extensive list of animal substances to be discarded from former Pharmacopœias upon the ground that they owe their properties to one and the same principle, as to gelatine, albumen, carbonate of lime, &c., &c., and that the fixed alkaline salt produced by the incineration of different vegetables has been found to be potash, from whatever plant it may have been obtained, with the exception of a few which yield soda and ammonia.

But from the very nature and object of a Pharmacopœia, it cannot be supposed to proceed *pari passu* with the march of chemical science; indeed it would be dangerous that it should, for a chemical theory should be examined by the light of experience before it should become current. A Pharmacopœia, however, is always an object of abuse because it is a national work of authority, and its title to respect and claim to utility is daily questioned among the pharmaceutical and medical fraternities. Prominent, undoubtedly, among other objects in the report of Dr. Squibb—who by the way is one of the wheel-horses—if I may be allowed the expression—of chemistry and pharmacy in this country, by whose invaluable assistance those sciences have so far progressed, and society has been so much benefitted—was the provoking among the members of the association an *honest, high-toned and scientific, general* discussion, whereby *truth* might be elicited, and science advanced.

Experience has fully established the value of many medicinal combinations, which at the time of their adoption could not receive the sanction of any chemical law. By referring to our present Pharmacopœia, Prof. Parrish's Pharmacy and other standard pharmaceutical and medical works of this country, we will observe combinations of this nature in which the chemical decompositions which would naturally constitute an objection to their use, are in fact the causes of their utility, a fact which has thrown considerable light upon the theory of medicinal combinations.

We never profit more than by those unexpected results of experiments which contradict our analogies and preconceived theories. Whenever a preparation is found by experience to be *effectual*, should the practitioner listen with extreme attention to any *chemical* advice for its correction or improvement? From a mistaken notion of this kind the "extractum colocynthidis compositum" was at one period in its history, with a view of rendering it chemically compatible with calomel, deprived of its soap, which previously had entered into its composition, and in consequence of which its solubility in the stomach was so materially modified, its activity impaired, and its mildness diminished, that it was found necessary to reinstate it. Substances may be *medically* inconsistent, which are *chemically* compatible. The stomach has a chemical code of its own, by which the usual affinities of bodies are frequently modified, often suspended, and sometimes entirely subverted. It has been found that copper swallowed in its metallic state was not rendered poisonous by meeting with oils, or fatty bodies, nor even with vinegar in the digestive organs. Other bodies, on the contrary, seem to sustain the same relations to each other in the stomach as in the laboratory, and are alike influenced in both situations by the chemical action of various bodies, many examples of which are to be found under the consideration of the influence which solubility exerts upon the medicinal activity of substances.

Acidity in the stomach is neutralized by alkalies, and if a carbonate be employed, we have a copious disengagement of carbonic acid gas, which is frequently very distressing to the patient. Many bodies taken into the stomach undergo changes and decompositions in *transitu*, independent of any play of chemical affinities, from the hidden powers of digestion.

As *Pharmacists*, then, should we not protest against the prevailing custom among those who are devoting most of their time and attention to chemistry and the manufactures dependent upon that science, of examining and deciding upon the pretensions of every medicinal compound in which we have long had the utmost confidence, simply by a mere *chemical* investigation of its composition? and of rejecting as fallacious every medical testimony which may appear contradictory to the results of the laboratory?

What kind of an appearance would the Dispensatory of 1870 present, if the expulsion of so many preparations as is advocated by Dr. Squibb were consummated? What innumerable disadvantages the pharmacist and physician would be subjected to in consequence. What an immense field would open out to the gaze of the empiric. What a traffic in non-officinal preparations would be instituted, resulting in the most fearful incongruities,—thereby defeating the grand objects and use of a national pharmacopœia. I do not wish to be understood as advocating the generally conceived opinion that a pharmacist cannot err if he implicitly obeys the dogmas of his authority, (the Pharmacopœia,) for it partakes of our own natures and is consequently imperfect, and a *too strict adherence* to it would have a tendency to oppose the progress of reason, the advancement of natural truths and the prosecution of new discoveries. Our present Pharmacopœia, perhaps, would have been more perfect had it not been that, to give general currency to a hypothetical opinion, or to a medical reputation of an inert substance, requires only the talismanic aid of a few great names, and when once established upon such a basis, ingenuity, argument, and even experiment, may open their ineffectual batteries. It is an instinct in our nature to follow the track pointed out by a few leaders; we are gregarious animals, in a moral as well as a physical sense, and we are addicted to routine, because it is always easier to follow the opinions of others than to reason and judge for ourselves. The laconic sentiment of the Roman satirist is ever opposed to our remonstrance:

> "Did Marcus say it was a fact? then fact it is;
> No proof so valid as a word of his."

In conclusion, my fellow pharmacists, let us be actuated by studious reflection rather than by established habits.

ON THE PREPARATION AND MEDICINAL USE OF HYDRATED SESQUIOXIDE OF CHROMIUM.

By C. J. Rademaker, M.D.

Having had frequent occasion to prepare this oxide of chromium, the following process was resorted to: Bichromate of potash was decomposed in the usual way by SO^3HO, the CrO^3

separated, and reduced by means of SO^2. The reduction may be explained by the following equation:

$$2CrO^3+3SO^2 = Cr^2O^3+3SO^3.$$

The sulphuric acid formed combining with the oxide of chromium to one equivalent of sulphate of chrome. The sulphate of chrome was decomposed by ammonia; the chromic oxide was washed with boiling water and dried.

This preparation has been used with great success in this city by Dr. Wilson and others, in the treatment of cholera infantum and other complaints of the alimentary canal.

Dr. F. C. Wilson, of New York, first informed me of its beneficial effects in these complaints, and at his suggestion the preparation was made. Its mode of action I am not able to give, but it is probably that of an astringent and tonic.

Louisville, Ky., Jan. 9, 1870.

REMARKS ON COLLODION AND CANTHARIDAL COLLODION.

By William Silver Thompson.

The unrecorded experience of many pharmacists who have prepared collodion and collodion cotton has probably been like my own, an alternation of successes and failures; and without attempting a review of what has heretofore been written on the subject, I offer the following remarks and formulas; not laying much claim to originality, except in some points considered essential to successful results in conducting the processes:

For preparing collodion cotton I prefer a mixture of nitric and sulphuric acids of the officinal sp. gr. to the sulphuric acid and nitrate of potassa mixture of the Pharmacopœia of 1860, as being less troublesome, less expensive and affording a better result. The most important point to be observed in the acid mixture process is to have the nitric acid of the officinal sp. gr. The sp. gr. of the sulphuric acid is not of so much importance; an acid somewhat stronger than the officinal may be used, but in no case of a less sp. gr. When the acids are mixed in a suitable glass vessel it should be covered with a plate of glass and placed in a vessel of cold water until the temperature of the acid mix-

ture is reduced to 70° or 80° Fahr., when the cotton may be immersed and allowed to remain from one to twelve hours, or even longer. At the temperature of 110° Fahr. a good cotton may be made in one hour, but above that temperature much waste and sometimes damage to the cotton ensues.

A cause of failure in preparing collodion cotton is probably in using too large a quantity of cotton to the amount of acid mixture used. Sixty grains of cotton cannot be properly immersed in two fluid-ounces, but I have succeeded in every instance when only thirty grains were used. After the cotton is immersed in the acid mixture there should be a sufficient excess to allow it to flow freely over and through the fibres, so as to insure contact with every particle. When the larger quantity of cotton is used it is almost impossible to immerse it properly, hence there is always a portion not thoroughly acted on by the acid, and which is necessarily to the same extent insoluble.

Washing the cotton is another important part of the process. When the quantity operated upon is small this may be accomplished without difficulty, by simply throwing the whole into a large bulk of water and keeping the temperature down by agitation with a glass rod; but with larger quantities it is necessary to proceed more cautiously, to avoid a great and sudden elevation of temperature, to the waste and damage of the cotton. A good plan is to take up a small quantity at a time on the end of a glass rod and immerse it in cold water, keeping it in motion until a large portion of the acid is removed, and so on until the whole is cooled. It may then be washed in the usual manner to free it entirely from acid.

Collodion cotton prepared as above retains its toughness of fibre, and is readily and entirely soluble in equal measures of stronger ether and stronger alcohol, with the exception of a minute amount of flocculent substance, which is deposited on standing. When the cotton is prepared with the acid mixture at a temperature considerable above 110° Fahr. the fibre is short and weak, and the cotton will be found to have increased but little or none in weight, owing to its solubility in the acid at an elevated temperature. This cotton, which is also very soluble, is said to be preferred by photographers, but is not so good for

pharmaceutical purposes as that prepared at a lower temperature.

Collodion Cotton.

Take of nitric acid, sp. gr. 1·42, one fluid-ounce;
Sulphuric acid, sp. gr. 1·84, one fluid-ounce;
Cotton freed from impurities, thirty grains.

Mix the acids in a beaker glass or other convenient vessel; cover with a plate of glass and place it in a vessel of cold water until the temperature is reduced to 70° or 80° Fahr., when remove the glass from the water and immerse the cotton. At the expiration of twelve hours wash the cotton with cold water until free from acid, and dry it at a moderate temperature.

Collodion.

Take of Collodion cotton, six grains or a sufficient quantity;
Stronger ether, one fluid-ounce;
Stronger alcohol, one fluid-ounce.

Mix the ether and alcohol in a three ounce vial and add the collodion cotton. Agitate the mixture occasionally until the cotton is dissolved.

Collodion paper has been introduced into use by photographers. This may be prepared in the same manner as collodion cotton, by immersing strips of pure, thin, unsized paper. It is more easily washed than cotton and makes a very pure and transparent collodion, using the same menstruum for its solution as for collodion cotton. If a sufficiently pure paper can be obtained at a moderate price, I think it will entirely supercede the use of cotton. Chemically pure filtering paper answers the purpose admirably, while tissue paper does tolerably well but is not so good. I have not succeeded so well with white printing paper, owing probably to its thickness.

Cantharidal Collodion.

Take of Cantharides, in fine powder, a troyounce;
Collodion cotton, a sufficient quantity;
Stronger alcohol, a sufficient quantity;
Stronger ether, a sufficient quantity.

Moisten the cantharides with four fluid-drachms of stronger alcohol and pack it in a glass percolator of proper size, arranged

for displacement, with the lower end closed with a cork. Pour on the contents of the displacer four fluid-drachms of stronger ether and cover it with an accurately fitting plate of glass. At the expiration of twelve hours displace with a mixture of stronger ether and stronger alcohol in equal measures until two fluid-ounces are obtained, which set aside in a three ounce vial. Continue the displacements until one fluid-ounce more has passed through. Allow this to evaporate spontaneously and dissolve it in the first two fluid-ounces of percolate obtained, to which add six grains of collodion cotton, or a sufficient quantity to make the cantharidal collodion of the proper consistence. Agitate the mixture occasionally until the cotton is dissolved.

Baltimore, Md., February, 1870.

ON CAMPBELL'S PROCESS FOR THE MANUFACTURE OF FLUID EXTRACTS.

By Henry C. Archibald.

Esteemed Editor—Feeling, as I do, a lively interest in all that pertains to the advancement of Pharmacy, and having read with interest Mr. Campbell's process for the manufacture of fluid extracts, together with comments thereon, I determined myself to apply his theory of percolation (which, by the way, is an old one) upon a few drugs, and to submit for inspection my views of the same. We all know that what is most wanted in a fluid extract is that the active constituents of the drug be fully and wholly represented, without, or at least, with as little decomposable matter as possible, at the same time to have a menstruum of uniform strength, capable of holding, without precipitation, the active matter so taken up. These qualities, with but few exceptions, are attainable by the processes of the U. S. P., which afford most excellent products. In order to determine whether Campbell's process possessed that merit, which the author claimed, a few experiments were made, with the following results:

1st. 16 troyounces of Jamaica ginger of the requisite fineness to pass through a No. 40 sieve, were moistened with f℥4 of a menstruum, composed of alcohol three-fourths and glycerin one-

fourth, the whole thoroughly incorporated and transferred to a conical percolator, covered with a disk of filtering paper, upon which the remaining f℥12 of menstruum were poured. When the percolate had penetrated the sponge, placed in the neck, a cork was inserted, and the whole was allowed to stand four days; after which, the cork being removed, the percolate was allowed to drop into a receiving vessel. Finding that all the menstruum had been absorbed, f℥16 of alcohol were added, and f℥ 15 of extract were obtained as the result. Pouring on another f℥, the preparation was brought up to its requisite volume. The f℥16 thus obtained were set aside, and percolation continued with alcohol, until f℥16 of exhausted liquor had passed, which were allowed to evaporate spontaneously. The residue consisted of resin and glycerin, the amount of resin present being 80 grains, or one and one-twenty-fourth p. ct. of the weight of the drug employed.

2d. Wild cherry bark, of requisite fineness, was carefully percolated with a menstruum, consisting of equal parts of glycerin and water. The result was an intensely dark extract, possessing the characteristics and odor of the bark in a marked degree. After obtaining the fluid extract, percolation was resumed with water, to find the amount of undissolved extractive matter, which was six p. ct. The exhaust obtained by continued percolation with water was highly colored and possessed a marked odor of the drug, showing evidently that the bark was not fully exhausted. The process for the manufacture of this fluid extract is extremely simple, the only doubt arising in my mind is whether the glycerin is capable of arresting fermentation, to which aqueous preparations of this drug are so liable.

3d. 16 troyounces of select rhubarb were reduced to a sufficiently fine powder to pass through a No. 40 sieve, moistened with f℥6 of a menstruum composed of glycerin one-fourth, water one-fourth and alcohol one-half, and treated in the same way as in the fluid extract of ginger. It required 24 additional fluid-ounces of dilute alcohol to displace f℥16 of the extract, which were set aside, and percolation resumed with dilute alcohol until the drug was thoroughly exhausted. The alcohol was recovered by distillation, the residue transferred to a water bath and al-

lowed to evaporate to the consistence of honey. Upon examination it proved to contain a large amount of glycerin, together with a very large proportion of extractive matter. The whole, when concentrated as far as possible with the means at my disposal, weighed no less than 5½ troyounces. Allowing one-half to be glycerin it would leave 2¾ troyounces of extract not dissolved by the first 16 fluid-ounces of menstruum.

In order to demonstrate whether the exhaust contained any virtues, I first took of the extract, after concentration, f℥ 1; effect, gentle laxative. Next day I repeated the dose and increased it at the same time to f℥ 3; result, decidedly cathartic.*

In order to demonstrate that the above experiment was correct, I made another displacement of rhubarb. The results were so nearly identical that it confirmed me as to the impracticability of the process.

Similar experiments were made with valerian and cinchona rub., both of which have proven that, no matter how long the maceration, or how slow the displacement, it is impossible to fully obtain all the active matter of a drug in 16 f℥ of percolate.

Although admitting that when the percolation is properly conducted, and the nature of the drug well understood by the parties manipulating, a fluid extract can be obtained, which will very nearly represent the full activity of the drug, without subjecting it to the injurious effects of heat during evaporation; still the product is not what it is represented to be, and is not of the strength directed in the U. S. P. Again, the difficulty and amount of care required to properly conduct the process is so great, that, by incompetent hands, and often even by those who are well versed in the system of percolation, very variable and inferior preparations must evidently be the result.

It is apparent that, in order to make Campbell's process practicable, a total revision of the Pharmacopœia, relating to the subject of fluid extracts, would be necessary; if a fluidounce of the extract were made to represent a half ounce of the drug, there is no doubt but that this system would become very useful

* QUERY.—Would not a menstruum composed of three-fourths alcohol and one-fourth glycerin dissolve more of the active constituents of the drug?

and popular, as then the whole of the active matter could be fully extracted without difficulty.

There still arises the question, whether glycerin is capable of arresting fermentation in all preparations wherein it takes the place of sugar. It is well known that it possesses great preservative powers, but whether it would meet every emergency, time alone can determine. The writer does not think it necessary to further enlarge upon the matter, but leaves it to the careful consideration of all who feel interested sufficiently to fully investigate the subject.

Philadelphia, Feb., 1870.

THE WEEDS OF WESTERN PEPPERMINT PLANTATIONS.

By John M. Maisch.

On pages 449 to 459 of the Proceedings of the American Pharmaceutical Association for the year 1858, there is printed a very valuable paper by Frederick Stearns, which is entitled "The Peppermint Plantations of Michigan," was copied at that time into many American and European periodicals, and is now frequently referred to in standard works on materia medica. It is stated in this paper that the weed which appears in the mint plantations is *Erechthites hieracifolia*, known by the common names of horse-tail, cow's-tail, mare's-tail, field-broom, bitter-weed and fireweed. Mr. Stearns states, after Asa Gray, that *Erechthites* grows in moist woods and *recent clearings*, but does not explain the contradicting fact that the same plant should appear in peppermint plantations *during the second year, and increase from year to year.* The habit of *Erechthites*, as I have noticed it near Philadelphia, is correctly stated in botanical works; it appears in new clearings, particularly where the ground has been burned over, but it disappears from cultivated open fields. Notwithstanding this irreconcilableness, there was no apparent reason for doubting the correctness of Mr. Stearns' statement, since the plant is very easily recognized and the facts are stated with positiveness.

In October last Messrs. Powers & Weightman referred to me a letter from Mr. C. A. Ensign, of Centreville, Mich., together

with two plants, which proved to be *Erigeron canadense*, Lin., and *Erechthites hieracifolia*, Raf., and were named correctly by Mr. Ensign, who, to use his own words, is not acquainted with botany; he further observed in his letter: "Peppermint grown on *new grounds*, or those just cleared, is quite likely to be mixed with true fireweed (*Erechthites*); but the colt's-tail (*Erigeron*), *commonly known among farmers here as fireweed** also, is *far more prevalent in our mint fields*, and almost always is the cause of what is called 'weedy oil,' though sometimes it may contain *Erechthites*, and in a few instances the distillation of rag-weed (Roman wormwood)."†

The druggists in Mr. E.'s neighborhood stated that he was wrong in naming the plants as he did; they relied on the U. S. Dispensatory, the statements of which are based upon Mr. Stearns' paper, who probably never saw the weed growing among peppermint, and merely named it after Gray, whose botany contains the ordinary names most widely known. Mr. Stearns' mistake led to the other errors; but it is to be regretted that there are apothecaries who do not feel sufficient interest in medical botany as to be able to tell *Erechthites* from a species of *Erigeron*.

Feeling interested in the subject, I corresponded with Mr. Ensign, who lives in the mint region and raises peppermint; he very kindly answered several of my queries, and since he is evidently a careful and shrewd observer, it will be best to give such portions of his letter, dated Nov. 4th, 1869, as may seem to be of particular interest, and may serve to correct the errors of others.

"The *Erigeron*," he writes, "is known in northern Ohio and this vicinity as horse-tail, mare's-tail, colt's-tail and cow's-tail, besides having acquired the name of *fireweed* in this locality. It not only grows among mint, but springs up in the wheat stubble and pastures. In the latter it grows more plentiful the first year after the grain crop is taken from the land, and where the seeding is light. I have noticed it growing plentifully this year in an old sod pasture.

* My italics; the following is underlined in Mr. Ensign's letter. J. M. M.

† *Ambrosia artemisiæfolia*, Lin.

"You have named the usual course of the weed in our mint fields,* except that the fourth year plowing, to continue the mint and kill the weed, is not now practiced here.

"The 'June grass' (a veritable grass, but I have no means just now of giving you the botanical name), as also stated, *sometimes* grows in mint, but I think this grass yields very little distilled matter. I cut a field of third year mint this season that had grown largely to both red and white clover, but I think the clovers yielded very little, if any, to the distillation. On the other hand, *Erigeron* yields about twice what the same bulk of mint usually does (or did so for me this year, which has not been so favorable for large yield of mint according to bulk, though the season has been favorable for a large growth). The growth of the clovers and grass in the mint may be said to be *occasional.* Besides these, I have seen horse-sorrel† attaining a thrifty growth with mint, and I have seen ragweed (Roman wormwood) growing in it, and one field was grown over with young shoots of sassafras (which last must produce a good deal of adulteration in the oil); but these may be said to be *seldom.*

"*Erechthites* is to be found in mint fields, but *only* on *new lands* or those *never before cropped;* and in such fields it is to be found in the first year's mint, about stumps, rough places, and in patches where brush, &c., were burned in clearing. I presume *Erechthites* grows some the second and following years also, but *have not noticed.*‡ It might be supposed that the tilling would keep these down the first year, as *Erigeron* is kept down the first year in old lands; but it is to be understood that farmers favor new lands in the openings for mint, as they need but comparatively little tillage for it, *Erechthites* being the principal weed to grow (and that where wood has been burnt). But the harvesting of the first crop of mint being unlike that of the following crops, better opportunity to reject the *Erechthites* is

* After Mr. Stearns' paper quoted above.—M.

† Query: *Oxalis stricta* or *Rumex acetosella*?—M.

‡ This observation is undoubtedly correct, since *Erechthites* does not inhabit cultivated or open fields; its occurrence in mint fields during the second year must be very rare, and it probably never grows in these fields afterwards, unless in close proximity to partly burned stumps.—M.

given, so I am inclined to think few crops are much affected with this weed, *Erigeron* being the chief cause of adulteration; by 'weedy oil' is commonly meant that containing *Erigeron* (that is, in this vicinity).

"Oils are often colored by rust from the boilers and pipes, and by causes I am unable to give as yet; perhaps too much heat, or by reason of the mint being cut too green or young. Formerly, when copper stills were used, the oil was milky in appearance, and was then all filtered (through paper). Most of the oil is sent away (generally to New York) after one distillation, but occasionally a bad looking lot is re-distilled, or filtered through animal charcoal and sand, the filtering said to waste less and take away all color. I do not hear of any further process of rectifying mint oil."

The information contained in this letter is of great interest, and if Mr. Ensign carries out his intention of sending me samples of the various oils, it is not improbable that some chemical tests may be observed, which may be of value for detecting the usual impurities.

The point which has been undisputably settled is that *Erigeron canadense* is the pest of the western mint fields, and the admixture of the oil of peppermint with the oil of this weed I believe is calculated to explain several circumstances. Our American oil of peppermint is exported to Europe in considerable quantities, but both in Europe and this country it does not command the price of European oil, the latter being usually rectified, and much superior in odor to our more rank American oil. Careful distillation of well selected fresh herb, and subsequent careful rectification, may remedy this defect.

Pure rectified oil of peppermint, when exposed to the air, thickens very slowly, while some of our commercial oil in a comparatively short time acquires the consistence of sweet oil, and is even turned into a thicker oleoresinous liquid. This is probably due to the presence of oil of *Erigeron;* the latter at least, when kept in partly filled vials, which are occasionally opened, soon becomes thick, and finally forms a transparent varnish.

Commercial oil of erigeron is but little acted upon by powdered

iodine; its behaviour is similar to that of oil of peppermint, and the admixture cannot therefore be detected by iodine. A reliable test for the presence of this adulteration is requisite; when discovered, the mint growers will probably find it to pay better to prepare pure oils of erigeron and of peppermint, and the latter properly rectified will then undoubtedly come nearer to the finer European oils, and yield a better profit to the maker. On the other hand, there is no good reason why oil of erigeron should not be much lower in price than it is at present, if it should come into more extended use as a medicinal agent, the plant not requiring cultivation and yielding fully as much oil as peppermint.

It may be mentioned incidentally, that *Erigeron Canadense* is one of those North American weeds which has spread over a considerable part of the civilized world.

ASSAY OF A PURE AMERICAN OPIUM,

From Poppies grown at Hancock, Vermont, by Mr. C. M. Robbins.

By William Procter, Jr.

On the 18th of January the writer received a sample of about an ounce of opium from Messrs. Rosengarten & Sons, with the information (in the form of a copy of a letter from Messrs. Howe & French, of Boston, Mass.) that it was received from Mr. C. M. Robbins, of Hancock, Vermont, who raised the poppies producing it from foreign seed, which had cost *ten dollars* per ounce. The opium was obtained by scarifying the capsules in the manner it is done abroad, and the exuded juice collected and dried in the sun, when it turns dark colored. No leaves, or capsules or other foreign substance is admixed, but its consistence is that of an extract rather soft than firm, but the softness does not appear to be due so much to moisture as to its caoutchoucoid character, as after long drying it lost but five per cent. of its weight, and broke with a short, shining fracture when quite cold. The entire crop of this experiment was 11 ounces, and in its odor and taste closely resembles good Turkey opium. In a letter from Mr. Robbins, since shown to me by Messrs Rosengarten & Sons, he says, "I planted about 15 square rods of land [about one-tenth of an acre] in poppies, rows two feet

apart, hills one foot apart. It was in growth from June 1st to October 1st. The heads were punctured only once a day, in the afternoon; we cut several small gashes in the sides, being careful not to cut through the inside. The opium was scraped off the next morning and dried on plates in the sun. In my opinion we did not get over half the opium that might have been obtained. The poppy seed was not planted early enough by two or three weeks. The poppy grows well and seems hearty, and requires dry soil."

One hundred grains of this opium was rubbed with water in a mortar until the whole was emulsionized. After standing several hours with occasional agitation it was thrown on a tared filter, and after draining, the dregs were well washed with water, dried, and weighed 33 grains. The liquid thus obtained was carefully evaporated, at a moderate heat, to six fluidrachms, mixed with its bulk of alcohol and filtered; 30 grains of aqua ammoniæ, sp. gr. 960, mixed with three times its bulk of alcohol was slowly added with constant stirring until a decided excess was obtained, well stirred, and allowed to stand 24 hours. The ammonia caused an immediate granular precipitate, which increased on standing. At the end of the period mentioned, it was collected on a tared filter, thoroughly washed with cold water and dried. The precipitate was of a uniform light drab color, and weighed 18·2 grains. It was now boiled in repeated portions of ether, washed on a filter with that liquid and then dried, when it weighed 16·25 grs. This substance has the properties of morphia, being reddened by nitric acid, blued by sesquichloride of iron, but is colored. It was therefore dissolved in repeated portions of boiling alcohol, the solution filtered and evaporated and crystallized. The filter was well washed, and, on drying, the brown matter weighed 0·5 gr., making the yield of crystallized morphia 15·75 grs.

The ethereal washings of the morphia precipitate yielded nearly 2 grains of crystalline matter, which formed a clear yellow solution with nitric acid, consisting chiefly of narcotina, with a little brownish amorphous matter around the edge of the dish.

The liquid from which the morphia precipitated was found to

yield a deep red coloration with sesquichloride of iron, and was treated with a slight excess of chloride of calcium, the gelatinous precipitate collected on a filter, washed, suspended in a fluid-ounce of water at 190° F., an excess of dilute hydrochloric acid added, filtered hot, and allowed to stand some hours. The crystalline granular precipitate of bi-meconate of lime was collected and treated with hot diluted hydrochloric acid, when the meconic acid in colored crystals, separated on standing, was washed and dried.

The original undissolved residue of the opium, weighing 33 grains, was now treated with coal oil benzine, nearly pure, until exhausted, and the dark liquid evaporated until all the benzine was removed. A soft elastic residue of caoutchouc was obtained, weighing 11 grains. This probably contained some narcotina and other principles as resin and fixed oil, but it was not further treated—the chief object of its extraction being to show by its quantity a sufficient cause for the softness of the opium in the absence of the usual percentage of moisture.

The residue left by the benzine was incinerated in a platinum crucible, yielding 0·5 gr. of light fawn colored ash.

The result from 100 grains, therefore, is as follows:

Morphia,	15·75
Narcotina, impure,	2·00
Meconic acid,	5·25
Caoutchouc, fatty matter and resin,	11·00
Insoluble residue (including 0·5 of ash)	22·00
Matter soluble in water, other than salts of morphia and narcotina, as gum extractive, etc.,*	38·50
Water,	5·00

Messrs Rosengarten & Sons meanwhile made an examination of this opium for morphia, for their own satisfaction, and obtained about 15 per cent., which corroborates this result for that ingredient, the discrepancy in amount being due to more careful manipulation in this assay.

No examination was made of the gum or extractive ingredients. On the whole it may be inferred that the opium obtained

* No attempt was made to isolate either codeia, narceia, meconin or other well defined principles of opium existing in small quantities.

by Mr. Robbins is pure and of extraordinary strength, indicating it to be the inspissated juice of the capsule of the poppy, unmixed with either organic or inorganic adulteration, and it is to be hoped that the producer will, in the coming season, give his earnest attention to another and more extended experiment, particularly in relation to the extraction of the juice so as to avoid loss. The quantity of soil under culture in this instance was about one-tenth of an acre, and the product was worth at the market rate per single pound ($\$14. \div \frac{11}{16} = \$9.62$) worth nearly $10 or about $100 per acre. If, as Mr. Robbins says, he obtained only half of the juice, this result may be doubled. Too much stress cannot be laid on the importance of keeping the product unmixed with impurities, and especially extractive matter as an adulteration, as in Mr. Wilson's so-called opium, which is almost wholly an extract of the leaves of poppies.

ON THE SYRUP OF IPECACUANHA.

By J. B. Moore.

In the last revised edition of the U. S. Pharmacopœia (1860) two of the officinal syrups are directed to be made by simply mixing the fluid extracts of their respective drugs, in proper proportion, with simple syrup, a departure from the usual mode of operating which I think is open to very serious objection, in view of the great uncertainty of the strength and quality of fluid extracts, as it is well known to the pharmaceutical profession at large that fluid extracts are the most unreliable of all Galenical preparations. If all apothecaries were adepts in percolation, and were qualified by much practice to manufacture fluid extracts for themselves, this would in some measure justify the action of the committee of revision. And if they were so qualified, how few would take the trouble to do so when they can buy them so cheaply, or else why is it that so many large wholesale manufacturers of this class of pharmaceutical preparations can find a market for their products.

We all know that it is a very convenient and expeditious way of making a syrup, to prepare it from a fluid extract; but I hold that the uniform quality and standard strength of any medicinal

agent should not be sacrificed nor placed in jeopardy for the sake of convenience or the saving of a little trouble and labor, and especially not in a preparation so important as that of syr. of ipecac. This method, therefore, should never have been sanctioned by so high an authority as that of the U. S. Pharmacopœia. I deprecate it, not only on account of its liability to afford inefficient and unreliable preparations in the instances referred to, but also because of the evil consequences that are likely to ensue from the example. It is establishing a precedent which is apt to engender and encourage a laxity of practice in the manufacture of other pharmaceutical preparations, which would be highly prejudicial to the best interests of medicine and pharmacy. Apothecaries may feel justified thereby, and I think with much propriety, in following the same short method in making other similar preparations. Now if this practice is generally adopted, and I know that it is followed by many apothecaries, it will offer to the medical profession a sorry set of medicinal agents with which to combat disease.

Unfortunately the fluid extracts from which the two officinal syrups named above are ordered to be prepared are among the most difficult and unsatisfactory to make. Complaints of the fld. ext. ipecac. are almost universal, and there are but few who can make it in a satisfactory manner for making the syrup, owing to the difficulty of completely separating the resinous matter, which causes an unsightly precipitate when added to simple syrup and mars its beauty and transparency.

I am well aware that the old formula for syr. ipecac., U. S. P. 1850, was very unsatisfactory, on account of the tendency of the syrup as made by it to fermentation, but I think that it has been supplanted by one still more objectionable. These remarks will also apply to the formula for syrup of rhubarb, and I hope to see these two formulas expunged from the next revised edition of that authoritative work, U. S. P., and in their stead good practicable and easily-worked formulas substituted, by which any pharmacist of ordinary intelligence may be enabled to make their preparations in a correct and reliable manner, directly from their respective drugs, and not by means of uncertain fluid extracts.

Owing to the great instability of many of the officinal syrups, much difficulty and annoyance have been experienced by pharmacists in their preservation, for a long period in warm weather. No matter how carefully prepared, certain of these syrups are liable to spoil if long kept, and in consequence of this tendency, apothecaries are obliged to make them in small quantities at a time, in order to avoid loss.

Various means have been proposed for the preservation of syrups, and many expedients have been resorted to, but none seem to have effectually accomplished the object. Many of the agents recommended for this purpose are both pharmaceutically and medicinally objectionable. Some adopt the plan of putting the syrup, while hot, into bottles, corking tightly and keeping them in a cool place; but this is troublesome and but few will do it, and even after this precaution has been observed, the syrup, when opened and transferred to the shop bottle, is still liable to spoil, unless used in a short time.

With the view of conquering this difficulty in some of the more important officinal syrups, such as those of ipecac. and rhubarb, mentioned above, and senega, scilla comp., wild cherry, &c., the writer has been engaged for the last year in a series of experiments for the purpose of devising a set of formulas for these syrups, by which they may be made not only more efficient and reliable, but also sure as to their stability.

The formula and process for the syrup of ipecac. I present below, and the result of my efforts with the others will be given in this Journal as soon as the process for each is *perfected* and *thoroughly tested.*

Take of Ipecacuanha in powder, No. 60, two troyounces.
Acetic acid, sixty minims.
Glycerin, eight fluidounces.
White sugar, in coarse powder, eighteen troyounces.
Alcohol,
Water,
Diluted Alcohol, of each a sufficient quantity.

Moisten the ipecac. with alcohol, pack it firmly in a cylindrical glass percolator, then gradually pour upon it, first, two fluid oz. of alcohol; when this has been absorbed, pour on gradually eight

fluidounces of a mixture consisting of two parts of alcohol to one part of water, and when this has all passed from the surface, continue the percolation with diluted alcohol until ten fluidounces of tincture have been obtained, observing to set aside in a plate or shallow dish, in a warm place, the first two fluidounces which pass, that they may evaporate spontaneously to a syrupy consistence. Then mix the acetic acid with the remainder of the percolate and evaporate carefully in a water bath, with frequent stirring, until reduced to two fluidounces and a half; add to this the reserved portion, and mix the whole with ten fluidounces of water, and continue the evaporation until the mixture is reduced to twelve fluidounces, and when cool filter through paper, and pass sufficient water through the filter to make the filtered liquid measure twelve fluidounces. To this, in a bottle, add the sugar; shake occasionally, and when dissolved add the glycerin, and strain through muslin.

When there is need to finish the syrup quickly, the solution of the sugar may be hastened by placing the bottle in hot water and shaking frequently.

The above formula affords a clear, bright and beautiful syrup, free from cloudiness or precipitation which so frequently occurs when made from the fluid extract.

I have a sample of this syrup made in July last, which, although it has been kept in a warm place in my store-room, in a bottle but partially filled, and frequently opened, is nevertheless apparently as fresh and sweet now as the day it was prepared, and I feel confident that it will keep for an indefinite time, unaltered at any ordinary temperature.

In manufacturing it on a larger scale, the greater portion of the alcohol may be recovered by the use of the still.

In the above process I have employed acetic acid to fix the emetia during the concentration of the tincture, as suggested by Prof. Procter in fluid extract of ipecac.

Glycerin has proved to be, in the writer's experience, an excellent and efficient auxiliary to sugar as an antiseptic agent in the preservation of syrups, and its general character and properties are so in harmony with those of the latter that it is peculiarly qualified for the above purpose.

Good glycerin has now become so low in price, costing but from thirty-three to thirty-five cents per pound, that to make use of it in the preparation of syrups adds but a trifle to their expense.

Twenty-five per cent. of glycerin, with the proportion of sugar employed in the above formula, will keep almost any syrup.

In estimating the additional cost of making syrup with glycerin, as above directed, it must be borne in mind that the quantity of sugar required is thereby greatly reduced. In a quart of the above syrup, but eighteen instead of thirty troy-ounces of sugar are employed, consequently the glycerin adds but about ten cents to the cost of the whole product,—a matter too trivial to be taken into account when its advantages are considered.

As an addition to all the pectoral and expectorant syrups, glycerin is useful not only as an antiseptic, but also on account of its enhancing, in a measure, their medicinal virtues, and as a means of diminishing the amount of saccharine matter in them its advantages are obvious.

Philadelphia, February, 1870.

NOTE ON SULPHO-CARBOLIC ACID AND THE SULPHO-CARBOLATES.

By the Editor.

Sulpho-carbolic acid and its salts were among the derivatives of phenyl which the fertile mind of Laurent worked out of the products of coal tar as early as 1841, describing it under the name of sulpho-phenic acid. Only of late, however, since carbolic acid has had its therapeutic and antiseptic properties more fully developed, has the attention of medical men been attracted to this acid and its salts. Mr. C. H. Wood, F.C.S., in a paper published in the Pharmaceutical Journal for January, 1869, says that Dr. Sansom had shown to the Medical Society of London the sulpho-carbolates of potassium, sodium, and magnesium, and recommended them as antiseptics in cholera and zymotic diseases generally; and that Mr. John Wood, of Kings College Hospital, in the Lancet of Dec. 7th, 1868, states that sulpho-carbolate of zinc "is prescribed in aqueous solution of from 3 to 6 grs. to the ounce as an injection in the treatment of gonorrhœa, and also as a dressing for wounds and sores."

In a recent letter from Dr. Frederick Hoffmann, of Sixth Avenue, New York, he says, in speaking of the sulpho-carbolate of zinc: "Recently it has been introduced into the hospitals of the Berlin Charité with such success that it has been adopted among the remedies of that famous institute. To all appearance, this salt, and perhaps other sulpho-phenates, may become a valuable and permanent addition to the materia medica.

"The zinc sulpho-phenate is said to combine the therapeutical virtues of both its constituents; its preference to phenol or to the phenates is said to depend on the gradual disengagement, and consequently upon the more continuous and uniform action of the phenol. The same may hold good with still greater promise for the internal use of this or other sulpho-phenates.

"I have prepared the sulpho-phenates of zinc and of sodium. The former has been tried, at my suggestion, by several physicians of New York, with entire satisfaction, in solutions of 3 to 5 grains per ounce, as a dressing to wounds and burns, as a gargle for the mouth or nose, and as an injection in gonorrhœa, etc."

In this city Dr. Freeman and others have used these salts to a considerable extent, and with decided success, especially in ozœna, and as it is therefore probable that they will get into general use, we have prepared the following notice:

Sulpho-carbolic acid is constituted like sulphovinic acid, though much more stable than the latter. According to Gmelin (Handbook, vol. xi, p. 157), its formula is $C_{12}H_6O_2$, $2SO_3$, whilst Mr. C. H. Wood gives it as $(C_6{}^*H_5)H\,SO_4$. It is formed, according to Laurent, by mixing carbolic acid with an excess of sulphuric acid, letting the mixture stand twenty-four hours, and then, after dilution with water, saturating it with carbonate of baryta at the boiling temperature, filtering out the excess of carbonate and the sulphate formed, evaporating the filtrate to crystallization, the crystals recrystallized from alcohol and washed with a small quantity of alcohol, and finally decomposing its solution with an equivalent of SO_3, HO, and evaporating the filtrate in vacuo.

The acid in a free state, however, is not needed in purity, and the latter part of the process may be avoided. The baryta salt

* C = 12.

is very convenient for obtaining the salts of other bases by double decomposition with their sulphates, the baryta being removed by the filter as sulphate.

According to E. Menzner (Chem. News, Jan. 3, 1868, p. 10), this acid is prepared by heating equal equivalents of carbolic acid and sulphuric acid in a water bath, diluting, after standing twenty-four hours, with water, neutralizing with carbonate of lead, filtering and decomposing the plumbic sulpho-carbolate with hydrosulphuric acid, and carefully concentrating the filtered solution first by heat and afterwards in a dessicator.

For the purposes of the pharmaceutist, Mr. C. H. Wood recommends the direct saturation of the crude acid (formed by mixing two volumes of pure carbolic acid with one volume of oil of vitriol in a glass flask, and heating the mixture to 290° F. for five minutes, allowing it to cool, and diluting with six or eight volumes of water) with the bases or their carbonates, and depending on crystallization to purify them. In this mixture there is a portion of uncombined sulphuric acid, which makes it necessary to purify all but the first crystallization by treatment with alcohol, to separate the insoluble sulphates. It appears to us that there is a loss sustained by this process, a portion of the carbolic acid is also uncombined, and that after mixing the acids and heating them it is better to allow them to stand twenty-four hours before saturating. This is the plan we have adopted in making the soda, zinc, and magnesia salts. When the acids are mixed a reddish color is developed, which grows deeper by standing, and stains the salts a light rose color. Laurent notices this peculiarity. In adopting the baryta process this is avoided in great measure. Dr. Hoffmann prepared his salts from the baryta salt, which he made "by digesting in a water bath, at a temperature near the boiling point of water, a mixture of equal weight parts of crystallized and previously melted phenol (carbolic acid) and sulphuric acid sp. gr. 1·84 during forty-eight hours, or until the mixture formed a clear solution with water. The acid mixture is then diluted with an equal bulk of water, and gradually added to freshly precipitated carbonate of baryta suspended in water until the carbonate is *nearly* all dissolved, when the solution of sulpho-phenate of baryta is ready for use."

Sulpho-carbolate of Soda.—Having had occasion to prepare this salt several times in quantities varying from a few ounces to more than a pound, we have used the following formula, which is very easily carried out, and may be found useful where this salt is needed to be made promptly, viz.:

Take of Pure Crystallized Carbolic Acid (Calvert's).
Sulphuric Acid (1·84 sp. gr.) 16 troyounces.
Distilled Water, three pints.
Crystallized Carbonate of Soda, a sufficient quantity.

Melt the carbolic acid in a bath of warm water and mix it with the sulphuric acid gradually added in a quart flask. Considerable heat is developed, which is increased by using direct heat until the temperature attains 280° Fahr. It is then allowed to stand, in a warm place, for 12 hours. Dissolve in the water, set aside a fluidounce of the solution and add the carbonate of soda, previously powdered, with constant stirring until saturation is approached, then proceed cautiously, to avoid an excess of alkali which deepens the rose color, using the reserved solution to insure its correction if, by accident, the solution is alkaline. (An advantage has been derived from using the bicarbonate of soda in the carbonate.)

The solution is now filtered, evaporated at 150° Fahr. to three pints, and set aside where it will cool slowly for 24 hours, to crystallize. The crystalline crusts should be broken up so as to drain in a glass funnel, and washed with a little ice cold water to remove the colored mother water, and then dried on bibulous paper, unless desired quite colorless, when it should be dissolved in hot water and again crystallized; but for all ordinary medical use the first crystallization, which amounts to about 22 ounces, is sufficiently pure, whilst the entire amount of the salts formed is more than 37 ounces. With the greatest care there appears to be free sulphuric acid, consequently sulphate formed, which is a great objection to the direct process for making the soda, zinc, and magnesia salts. Sulpho-carbolate of soda crystallizes in colorless rhombic prisms, and are permanent in the air, though containing water of crystallization. For this reason the mixed crystals of sulphate and sulpho-carbolate are easily distinguished on exposure, the former effloresceing. It is

soluble in five parts of water at 60° Fahr., and also soluble in alcohol and glycerin. It is not precipitated by solution of chloride of barium unless sulphate of soda is present, and as the latter is the most probable impurity when made in this way it is a good test of purity. When heated in a gas jet the acid is decomposed, leaving sulphate of soda and sulphuret of sodium.

Sulpho-Carbolate of Zinc is made by the direct process by saturating the hot aqueous sulpho-carbolic acid with carbonate of zinc free from iron, filtering and concentrating the solution at 150° F., and setting it aside to crystallize. The evaporation must not be pushed too far, else some sulphate crystals will be found. By throwing the mother liquid into sufficient alcohol, the sulphate will be precipitated and the sulpho-carbolate retained. This salt crystallizes readily in brilliant scaly crystals, which are soluble in two parts of water at 60° F., and in five parts of alcohol, according to Hager.

Sulpho-Carbolate of Lead.—This salt is easily made by saturating the hot watery solution of impure sulpho-carbolic acid with carbonate of lead, filtering hot and evaporating, if necessary, to the point of crystallization. As in making the baryta salt, the free sulphuric acid present is precipitated as an insoluble sulphate, thus separating it completely. It crystallizes less readily than the soda and zinc salts, is very soluble in water and soluble in alcohol and glycerin, is not precipitated by chloride of barium in weak solution, but gives the usual reaction with iodide of potassium and sulphide of ammonium, and its base is not precipitated by a current of carbonic acid. When, however, the salt is dried, on redissolving either in water or alcohol a residue is left, which is at once dissolved by acetic acid. Sulpho-carbolate of lead may be used as a cheaper substitute for the baryta salt to procure other salts by employing it in equivalent proportions with the sulphate of the base wanted—the lead falling as sulphate—when on filtration and evaporation the salt is obtained. Its therapeutical character is yet to be determined, but it is quite probable that in those diarrhœas where the acetate of lead is indicated, and especially those accompanied by a condition corrected by carbolic acid, this salt may be found

useful. Its solubility in glycerin and in alcohol will enable it to be used in lotions with advantage.

Sulpho-Carbolate of Lime is readily made by the same process, and in this case the free sulphuric acid is also separated in the process as sulphate of lime. The proportion of the acid is much larger in this salt than in some others. It is also soluble in less than its weight of water at 60° Fahr., soluble in alcohol and to some extent in glycerin.

Sulpho-Carbolate of Quinia.—When crude free sulpho-carbolic acid is saturated with pure quinia, an oil like compound is formed, which gradually dissolves in the water and has a dark brown color. Supposing the impurity of the acid was the cause of this condition, an alcoholic solution of sulpho-carbolate of lead was mixed with one of sulphate of quinia in alcohol, the solution filtered from the sulphate of lead and spontaneously evaporated, when the quinia salt separated in the same oily condition, but on standing some days it became a nearly white solid, with a crystalline structure. It is exceedingly bitter, not very soluble in water, but soluble in alcohol.

ON ZINC SULPHO-PHENATE.*

By Dr. Hager.

The preparation of this salt presents no difficulties if pure crystallized phenol and pure monohydrate of sulphuric acid are operated on. Equal weight parts of both are digested at about 125° F. for two to three days. When the phenol is pure a clear, yellowish, thick liquid is obtained, which on cooling deposits conglomerations of crystals (probably uncombined phenol), but which soon congeals to a white crystallized mass. Although all conditions are present to combine all the sulphuric acid with the phenol, yet there remains always, and no matter how long the digestion may be continued, a surplus of about 10 per cent. sulphuric acid. For this reason it is advisable to mix 120 parts of sulphuric acid to every 100 parts of phenol. After two or three

* Translated from Dr. Hager's Pharmaceutischer Centralhalle, No. 1, 1870 (January 6, 1870), by Dr. F. Hoffmann.

days the combination is accomplished, and the mixture is then diluted with ten times its bulk of water. Now twice as much as the quantity of sulphuric acid operated upon, or better, a little more, of dry barium carbonate, is gradually added (to 120 parts ($\dot{H}\,\ddot{S}$, 245 parts $Ba\,\ddot{C}$). The latter had better be triturated with some water before it is added to the acid. Under evolution of carbonic acid barium sulpho phenate is formed, a salt soluble in water and in alcohol. At the same time any excess of free sulphuric acid is neutralized and transformed into barium sulphate. The whole is allowed to stand in a warm place for some hours, and is then filtered through a damp filter; the remainder on the filter is washed with some warm water. The filtered solution of barium sulpho-phenate may be evaporated to dryness, whereby it remains behind as a white salt deprived of its water of crystallization. This is soluble in two parts of water. A small quantity of this barium salt is retained, the balance is dissolved in water in the proportion of 10 parts of the first to 30—40 parts of the latter. To this filtered solution a solution of 6 parts crystallized zinc-sulphate in about 18 parts of water is added. Of this zinc solution a small quantity is also retained. Now, after leaving the mixture on the water bath for several hours, about 10 drops of the supernatant solution are diluted in a test tube with about 100 drops of water; this being divided in two parts, the one is examined with some drops of the retained zinc-sulphate solution, the other with the barium sulpho-phenate solution. If any reaction ensues in either case, the one or other of the retained solutions has carefully to be added to the bulk of the solution, in order to accomplish the exact decomposition. A slight excess of zinc sulphate should, however, prevail, so that the barium may be completely precipitated.

Finally, the filtered solution of zinc sulpho-phenate is evaporated under continual stirring until a drop, when allowed to fall on a cold glass plate, congeals to a salt mass. The liquid is then allowed to cool under frequent stirring, and the resulting salt mass is dried in a warm place. When completely dry it forms a white salt.

The evaporation of the solution of the barium sulpho-phenate, its re-solution and the filtration, are only required when a phenol

has been operated on which was not palpably pure. When this, however, is the case, the solution of barium sulpho-phenate may be decomposed, without any further operation, by the zinc-sulphate solution, with the precaution to retain some of the first solution in order to meet an accidental excess of the zinc solution. For every 100 parts of phenol operated upon, 152 parts of crystallized zinc sulphate may be added, of which only one-twelfth may be retained for further addition if required.

The preparation of zinc sulpho-phenate may be facilitated by the use of perfectly pure reagents. When they have been mixed and combined in the above stated proportions and process, the warm solution, after having been diluted with twice its bulk of water, is gradually neutralized with zinc-oxide (free of oxide of iron). When no more oxide is dissolved the warm solution is allowed to cool, and is then filtered; the filtrate is evaporated to nearly half its original bulk, and is then mixed and shaken with ten times its volume of alcohol (90—92 per cent.), and the mixture is allowed to stand in a cool place for several days. The zinc sulphate separates as a powder; the supernatant alcoholic solution of zinc sulpho-phenate may either be directly evaporated to dryness or the alcohol may first be restored by distillation, and the evaporation may then be accomplished. The residue is white zinc sulpho-phenate of a purity that it yields with barium chloride but a slight reaction.

One equivalent phenol, or phenyl-alcohol, forms, with two equival. monohydrate of sulphuric acid, a compound ether, sulpho-phenic acid ($C_{12}H_5O, SO_3 + HO, SO_3$). This, when combined with barium oxide, forms $C_{12}H_5O, SO_3 + BaO, SO_3$,* and, with zinc oxide, the corresponding zinc salt. The barium salt, when crystallized from its aqueous solution, forms rhombic crystals, with three equivalents water of crystallization; the zinc salt, when crystallized, forms bright lamellas, with seven equivalents crystallization water. The officinal salt derived by exsiccation is deprived of the water of crystallization; it dissolves in two parts water of medium temperature, and in five parts alcohol of 90 per cent.

The preparation of zinc sulpho-phenate from a not quite pure

* Nomenclature and notation are that of Dr. Hager.

phenol yields different results. The sulpho-phenic acid is then dark colored, and the solutions of the salts therewith prepared have a pink color. The zinc sulpho-phenate when crystallized has a pink color; when desiccated, a reddish tint. This coloration, however, does not at all impair their medicinal value and their therapeutical action.

These more or less colored solutions of the zinc sulpho-phenate, when near the end of their evaporation, emanate a remarkably fine odor, resembling that of pelargonium. This observation may likely trace to a new source a fine perfume. Some of our most brilliant colors are derived from a similar origin.

Zinc sulpho-phenate combines the therapeutical virtues of zinc sulphate and of phenol. Its solution for injections is obtained by dissolving 1 part of the salt in 150 to 200 parts water.

REMARKS ON TITRATED SOLUTIONS OF OPIUM.

By G. A. Zwick.

To the Editor of the American Journal of Pharmacy:

If the remarks below be acceptable, you may insert them in your Journal. They are made, of course, without desire to criticise Dr. Squibb's article on this subject in your last number, but simply to present a view from the prescription counter as well as from the laboratory.

A titrated tincture of opium is no doubt of as much importance as the requisition of the Pharmacopœia—that the "concrete juice of the poppy" contains at least seven per cent. morphia. Dr. Squibb's suggestion, that the term "concrete juice" is entirely indefinite, according to the amount of moisture, is equally true and appropriate. He proves that it may contain all the way from seven to fifteen per cent. of morphia, and yet be within the pale of officinal requirements.

These points admitted, make an assay of opium, whether it be intended to be used as a powder or for the purpose of making tinctures, almost indispensable. I have tried Dr. Squibb's process, and succeeded with it, but it is probably better adapted for the laboratory than the apothecary, who would desire to examine opium without reference to liq. opii compositus (Squibb). For a quick and equally accurate result I would suggest the following:

Take 100 grains of powdered opium, triturate and work well with sulphuric ether in a mortar, with pestle, pouring off into a filter and renewing the ether until the opium ceases to impart color to the ether. After the filter and the opium have drained off and dried, turn them back into the mortar, cut up the paper with scissors, add warm water gradually, and work paper and opium into a pulp; finally add sufficient water to make an ounce or thereabouts, set this aside for twelve hours to macerate, then strain through flannel and return the expressed residue into the mortar, working it over as before with warm water; strain again, and repeat this manipulation until the washings become tasteless, or until the liquor ceases to acquire a reddish tinge with a drop each of nitric acid and tinct. chloride iron. This strained liquor is then filtered and evaporated, and worked for morphia, either according to Dr. Squibb's process (omitting the washing with ether, of course), or according to the Pharmacopœia process, observing Dr. Squibb's direction—to cover the liquor with a water joint. To be sure that no morphia is lost, the liquor should have 48 hours' rest. After the first day there is sometimes a small gain in crystals; that for morphiometrical purposes it is not necessary to decolorize the crystals, Dr. Squibb mentions distinctly, and this is a great saving of time and morphine when working with small quantities.

Exhausting this powdered opium *dry*, with ether, will be found a saving of time and ether, as also, from actual trial, I found the manipulation of the opium in a mortar, and pressing the liquor through a strainer, to exhaust the opium with half the menstruum that is required to exhaust by washing through a filter. This same experience I have formerly often made in making tinctures; by using a powerful press it would only require half the amount of menstruum to exhaust that percolation needed to leave the dregs tasteless.

The number of grains of morphia obtained from 100 grains of opium of course represents the percentage, and it will also hardly be necessary to add that the same care and accuracy that is enjoined by Dr. Squibb in weighing, &c., is indispensable here.

As opium is cheapest about November and December, this would be the best time, as a rule, to lay in a supply for the year,

which could then be powdered and tested; and in this way uniformity could be obtained, by one or two tests, for an entire year.

In regard to the liquor opii comp., Squibb, I should be with the framers of our Pharmacopœia,—*i. e.*, regard it rather in the light of an extemporaneous prescription than a formula proper for the officinal list. It may be well to suggest a corrigent to physicians, and Dr. Squibb truly says, "physicians might take counsel in this direction occasionally to advantage;" but it is doubtful whether so active an addition ought to be made for general purposes, and by the addition of alcohol, which must be made to hold the chloroform and ether, the watery solution of opium which the Pharmacopœia intends is entirely lost sight of. Besides, the nature of ether and chloroform is such that the latter half of a 1lb bottle, unless used in large quantities, would probably contain little or none, or at least, as Dr. Squibb himself states, an indefinite quantity; and if this combination is not always desirable,—and this ought to be left to the judgment of the physician,—then the liq. opii comp. cannot displace or replace the tinctura opii deodorata of our present Pharmacopœia.

In Europe the tendency now is to simplify the Pharmacopœias, and establish a uniformity, abolishing complex formulas. This is instanced by the consolidation of the Dublin, London and Edinburgh Pharmacopœias, also the final adoption of a Pharmacopœia Germaniæ; further, a pressure to adopt universally the French system of weights and measures. A similar inclination should get a footing here, and I am sure Dr. Squibb is the last man to impede the wheel of progress. A multiplicity of formulas may work confusion. We have now an *old* compd. liq. opii, a *new* compd. liq. opii, and a compd. tinct. opium according to Dr. Squibb. Such formulas may be convenient to some,—supplying, as it is called in Germany, a *pons asinorum*,—but most physicians prefer to make their own prescriptions, though we have one doctor here who prescribes Dr. Squibb's liquor opii comp. in quantities of six ounces, without regard to the admonition of Dr. Squibb himself, "that the greatest skill in using such preparations (if they are not to become hobbies) is to know when not to use them." This same practitioner prescribes Wright's Vegetable Pills, Maretrisi's Catholicon, and Smith's Wild Cherry Cough Balsam."

Covington, Ky., Feb. 9th, 1870.

AROMATIC GLYCERATE OF RHUBARB—(GLYCERATUS RHEI AROMATICUS.)

By H. Treverton Bond.

The introduction of glycerin has worked many radical changes in pharmacy, and that there are yet many uses to which this admirable substance can be applied there is not the slightest doubt. One of the most important purposes mentioned in connection with its further utilization is its substitution for sugar in the syrups at present in use. There are many reasons to suppose that quite a number, if not all, the present officinal syrups could profitably be replaced by glycerates. [See page 177 for *Glyceratus simplex*, by the same author.—Editor.]

The objections to syrups are well known and numerous. They are liable to ferment in the shelf bottles; they ferment in the stomach, and to many persons are nauseating and disgusting when taken in the quantity necessary to obtain a medicinal dose of the active ingredient or ingredients. One of the syrups that, in my estimation, can be very beneficially replaced by a glycerate is aromatic syr. rhei, and having succeeded in preparing such an article resulting in an elegant and handsome pharmaceutical preparation, I herewith send formula.

Take of Rhubarb, in moderately fine powder,	2½ troyounces.
Cloves, Cinnamon, each in fine powder,	½ troyounce.
Nutmeg, in moderately fine powder,	2 drachms.
Glycerin,	1½ pints.
Diluted alcohol,	1 "
Water,	q. s.

Mix eight ounces of the glycerin with the diluted alcohol, then mix the powders, and having moistened them with f℥iij of the mixture, introduce into a conical percolator and gradually pour on the glycerin and diluted alcohol mixture until a pint and a half of the tincture is obtained, (displacing the last portions, if necessary, with water); add the rest of the glycerin to the tincture, then add sufficient water to measure seven pints, and mix thoroughly together and filter.

The result is a handsome preparation, identical in strength with the syr. rhei. aro. of the U. S. Pharmacœpia, and posseses none of its objections while it has many advantages; it can be

administered in much larger doses, and thus reach cases where a syrup would be inadmissible on account of the sickening properties of the sugar, or where a tincture would be interdicted by reason of the stimulating qualities of alcohol.

The preparation has been exhibited to a number of physicians of respectability, and has, in every instance, met their unqualified approval.

Wheeling, West Virginia, Feb. 14th, 1870.

ON SOME CONSTITUENTS OF ERGOT.

By J. Carl Herrmann.

The author extracted 20 oz. finely powdered ergot with ether and obtained 6 oz. of a brown-yellow thickish non-drying oil, of an aromatic odor and acrid taste, at 18° C. of 0·92496 spec. grav., which at a lower temperature separated floccules of a solid fat.

4 oz. of the oil were saponified with caustic soda; during the boiling, traces of ammonia and trimethylamina were observed in the vapor. The crude soap had a brownish-yellow color, which remained in the mother liquor on salting out the soap; this gradually became sticky in the air. The fatty acids were separated by sulphuric acid and repeatedly boiled with water; the first portions of which assumed a golden-yellow color and separated a brown powder, which was similar in color to powdered ergot, retained a little fat, had an acrid bitterish taste, the odor of the oil, was insoluble in water and dilute acids, readily soluble in alcohol, ether and alkalies, and may be regarded as coloring matter.

The aqueous liquid was distilled, and small quantities of butyric and acetic acid were found in the distillate, while nearly half an oz. of glycerin was obtained by concentrating the residue left in the retort and treating it with strong alcohol.

The fatty acids were filtered in a water bath funnel, combined with carbonate of soda, and the soda soap in alcoholic solution precipitated by acetate of lead. The resulting plaster was washed with water and exhausted by ether. The undissolved powder contained 1·45 water, 59·10 oxide of lead and 39·61 fatty acid (mean). On evaporating the ether the lead soap was

left of the consistence of a soft extract, and yielded 1·72 water, 19·37 oxide of lead and 78.64 fatty acid (mean).

To determine the nature of the fatty acids, a portion was pressed between bibulous paper and repeatedly crystallized from hot alcohol; the dry crystals fused at 62° C., and congealed between 57 and 58° C.; they consisted of pure hydrate of palmitic acid. Ultimate analysis proved the correctness of this inference.

The extract, like lead soap, was decomposed by muriatic acid, and the fatty acid taken up by ether; it proved to be oleic acid.

The proportion of lead oxide to the acids is 5 : 4, and the fatty acids are 1 palmitic to 3 oleic acid; the composition of the plaster is, therefore, $C_{32}H_{31}$ (2 PbO) O_3 + 3 $C_{36}H_{33}$ (PbO) O_3. By the action of ether this was decomposed so as to yield a basic palmitate and an acid oleinate.

The coloring principle contained in the oil was obtained by treating it with ammoniacal alcohol, and evaporating the alcohol. It corresponds, the solubility in ether excepted, with Wiggers' ergotin, and to it the oil owes its color, aromatic odor and acrid taste.

The author also disproved the assertion of Manassewitz, that the oil of ergot was not saponifiable by caustic potassa.

Since Manassewitz did not succeed in isolating Wenzell's ecbolina, the author operated upon 30 oz. powdered ergot by nearly the process described by Wenzell (in Amer. Journ. Ph., May, 1864) and isolated the alkaloid, which possessed the appearance and reactions indicated by Wenzell. Herrmann also digested the precipitate by bichloride of mercury in Wenzell's process, with carbonate of lead, exsiccated the mixture and exhausted with 90 pr. ct. alcohol, which dissolved ecbolina, together with a trace of chloride of lead. The author promises further researches on ecbolina, also on Wenzell's ergotina and ergotic acid.

1000 grs. powdered ergot contained 50 grs. water, and yielded 22·01562 ashes, consisting of chloride of sodium, silica (14·67 pr. ct.,) and potassa (30 pr. ct.,) soda, lime, magnesia (4·88 pr. ct.,) alumina, iron, manganese combined with phosphoric acid (45·12 pr. ct.)—*Wittstein's Viertelj. Schr.*, 1869, 481–497.

COLLODION.

By Frederick C. Mussgiller, of Brooklyn.

The officinal collodion is liable to at least two practical objections. The first is that it contains too little gun-cotton. And the second is that for surgical purposes, whether used of the present strength or stronger, the film contracts strongly, and is very liable to crack and present sharp edges, which irritate the parts to which it is applied, and favor the separation of the film at an earlier period than that at which it separates by reason of the cutaneous transpiration beneath it. The cantharidal collodion is also liable to the same objections, besides not containing cantharides enough to secure the effect for which it is used. The addition of more gun-cotton, of course, remedies the first objection; and the addition of a small proportion of castor oil or glycerin, or other non-drying substances, as is well known, render the film flexible and tough; but how much of either is proper or necessary, and how they are to be used, has not been well or accurately determined. In view of the approaching revision of the Pharmacopœia, a series of experiments upon the points here raised were undertaken, and the writer offers the following formula to the Association as a voluntary contribution:

Collodion is applied to two distinct uses in surgery. In one, its contractile force is rendered available in the compression of small tumors, etc.; in the other, it is used as a protecting coat or covering to prevent mechanical irritation and access of the air. The first use of course requires that the film should contract as much as possible, whilst in the second, and by far the most general use, the contraction is objectionable. The recent British Pharmacopœia meets this difficulty by providing two kinds, one called simply "Collodium," the other "Collodium Flexile," the latter containing Canada balsam and castor oil. The Paris Codex has only one kind, and uses castor oil alone. Glycerin, where properly used, is considered by some writers better than either, but it cannot be used as quoted in the U. S. Dispensatory, from MM. Cap and Garot. It is suggested that the U. S. Pharmacopœia supply two kinds, the flexible to be called simply collodium, but the old kind, which is comparatively

little needed, to be called collodium contrahens. The first may be prepared as follows:

Take of pyroxylin or gun-cotton, eighty-six grains.

Castor oil, eighty-six grains (or glycerin, sixty grains).

Stronger ether, three and a half fluidounces, or two troyounces and two hundred and six grains.

Stronger alcohol, one fluidounce, or three hundred and seventy-six grains.

Dissolve the castor oil (or the glycerin) in the stronger alcohol, add the ether to the solution, and dissolve the gun-cotton in the mixture by shaking. Should it contain visible floating particles, set it aside for a few days, and decant the collodion from the sediment. Collodion is a nearly colorless opalescent liquid, of a syrupy consistence, very liable to loss by evaporation, and dangerously inflammable. A small portion, say twenty or thirty grains, weighed in a counterpoised corked vial, and then exposed to spontaneous evaporation by removing the cork and laying the vial on its side till dry, loses ninety-one per cent. of its weight in four hours.

In comparing the formulas of some of the modern Pharmacopœias, no two were found alike, and the following are the percentages by weight of pyroxylin:

The U. S. Pharmacopœia			3·50	per cent.
" British	"	"	2·60	"
" French	"	"	7·00	"
" Prussian	"	"	3·	"
And the formula above given			5·	"

of pyroxylin. Specimens of the present officinal U. S. Pharmacopœia Collodion, of the British "Collodium," and "Collodium Flexile," of the French, of the Prussian, and of the formula here proposed, are presented herewith, as well as specimens showing the effect of larger proportions of glycerin. All have been tried by the writer upon himself, and that which appears to yield the most durable and flexible film in summer weather is the collodion containing five per cent. each of gun-cotton and castor oil. It is observed that the smaller proportion of gun-cotton renders the film more contractile, and therefore for this variety the small proportion of the British Pharmacopœia is recommended. In

the writer's practice the cantharidal collodion has for some years past been increased, in the proportion of cantharides used, by ten per cent., but it is doubted whether this be a sufficient increase. It should always be made flexible or non-contractile, and therefore requires more gun-cotton. Specimens of both proportions are presented herewith.

The addition of a proportion of phenols, or carbolic acid, to the flexible collodion proposed, will often be found very useful and important. From one to ten per cent. of the coal tar creasote, or impure carbolic acid, may be conveniently added, and this mixture yields a film well calculated to replace many of the more complex and clumsy "carbolic acid plasters" in use.

List of Samples of Collodion.

Number.	Percentage of Gun-Cotton.	Percentage of Glycerin.	Percentage of Castor Oil.	Percentage of Canada Balsam.	Percentage of Cantharides.	Percentage of Impure Carb. Acid.	Remarks.
1	3·50						Strictly officinal.
2	3·99						10 p. c. increase.
3	4·4	2·48					Clear.
4	4·4	3·					Slightly cloudy.
5	4·4	3·7					Cloudy.
6	4·4	4·4					Slightly milky.
7	4·4	4·62					Milky.
8	4·93	4·93					Milky.
9	3·						Prussian Pharmacopœia.
10	2·6						British Pharmacopœia.
11	2·6		2·65	5·45			British Flexile.
12	7·00		7·00				Paris Codex.
13	5·		5·				Best flexible film.
14	4·4		4·4				
15	7·53	7·53					Milky and dense.
16	7·53	5·					Slightly milky.
17	7·53	3·76					Clear.
18	1·9				½ grain to a minim.		Strictly officinal.
19	3·				6-10 grain to a minim.		10 p. c. Canth. more.
20	5·		5·			1	Phenaten.
21	5·		5·			2	"

It is suggested that all these specimens be referred to the Committee on Specimens for report.

Brooklyn, Sept. 2d, 1869.

—*Proc. Amer. Pharm. Assoc.*, 1869.

EXAMINATION OF THE DEPOSIT FROM TINCTURA RHEI, U. S. P.

By James T. King.

The yellow deposit in a storage bottle of tincture of rhubarb, U.S.P., was collected on a filter, washed, and dried until it ceased to lose weight.

Ten grains of this was treated with liquor potassæ until no more would dissolve; it was then filtered, washed and dried.

The portion insoluble in potassa consisted principally of extractive.

The filtrate was supersaturated with hydrochloric acid and filtered; the precipitate, well washed and dried, weighed 8 grs. This was treated with chloroform, and the solution allowed to evaporate spontaneously; when well dried, was weighed, giving 5·4 grs. of nearly pure chrysophanic acid. The 2·6 grs. insoluble in chloroform were destitute of any taste of rhubarb, soluble in alcohol; on platinum foil with heat it fused, then ignited, giving off a yellow flame, leaving no ash or residue. It is probably resin. Finding in the deposit so large a per cent. of chrysophanic acid, which is supposed to be one of the more active principles of rhubarb, the following experiment was made to determine what portion of the soluble matter of rhubarb would be precipitated in a given time.

One pint of the tincture of rhubarb was made according to the U. S. P. The materials weighed 840 grs. When the tincture was finished, the drug appeared to be exhausted of all matter soluble in the menstruum. The undissolved portion was dried on a water-bath, and weighed 443 grs., showing a loss of 397 grs. By previous examination the rhubarb was found to lose 10 per cent. of moisture; this would leave 313 grs. of matter in solution.

The tincture was placed on a shelf in the store room exposed to the diffused light, and occasionally opened. At the expiration of eight months it was filtered, the precipitate washed and dried. It weighed only 3·1 grs.,—about one per cent. This was treated with potassa and hydrochloric acid in the same manner as the other precipitate or deposit, and gave 1·2 grs. chryso-

phanic acid. The small amount of precipitate shows that the tincture would not deteriorate within a reasonable time for dispensing the same.

Before ascertaining that the deposit bore so small a proportion to the matter held in solution, I had prepared four samples of tinctures, using for No. 1 the officinal formula; No. 2, the rhubarb in moderately coarse powder, 2 parts alcohol and 1 part water; No. 3, rhubarb in fine powder and stronger alcohol; No. 4, rhubarb in moderately coarse powder, 2 parts alcohol, 1 part water, and 1 part glycerine.

The materials in each percolator appeared to be exhausted, and were nearly tasteless; the tinctures 2 and 4 resembling the officinal preparations in appearance, No. 4 being sweet, and having the taste of rhubarb somewhat masked. No. 3, or alcoholic tincture, was of a light wine color.

These four tinctures were placed on a shelf in the saleroom, subject to the same light and treatment as in the first experiment. Within a few days a deposit commenced forming in each, —much the least in No. 3,—and at the expiration of eight months a yellow deposit covered more or less thickly the bottom of each bottle.

Each tincture was filtered through a tared filter, precipitates washed with distilled water, dried until they ceased to lose weight, and weighed.

Deposit in No. 1,	light yellow color,	4·5	grs.	to pint.
" " 2,	yellowish-brown color,	2·4	"	"
" " 3,	reddish "	2·0	"	"
" " 4,	yellow "	4·4	"	"

These deposits were examined only qualitatively. Nos. 1 and 4 gave indications of considerable chrysophanic acid, No. 2 much less, and No. 3 but a trace.

It is evident that a tincture made with the stronger alcohol will retain all the active principles in solution, or, if so much alcohol would be objectionable, a tincture made with two parts alcohol and one part water would be nearly as permanent.

Middletown, N. Y., Sept., 1869.

—*Proc. Amer. Pharm. Assoc.*, 1869.

REMARKS UPON THE PREPARATION OF FLUID EXTRACTS,

BY THE PROCESS PROPOSED BY MR. SAMUEL CAMPBELL, OF PHILA.

By Alfred B. Taylor.

Many of you have no doubt read an article upon the preparation of fluid extracts, published in the September number of the *American Journal of Pharmacy*, on page 385.

From the importance of the principles involved, and the bearing they are likely to have upon our National Pharmacopœia, I have thought that some remarks upon the subject might be profitable as well as interesting.

I herewith submit to your inspection samples of all the fluid extracts officinal in the U. S. Pharmacopœia, with the exception of two or three, and of several others that are not officinal, prepared by Mr. Campbell, in accordance with his suggestions. I have here also the residues from which these extracts have been prepared. Examination of these specimens will show not only the quality of the various extracts, but also the completeness with which the different drugs have been exhausted.

The importance of long maceration as a requirement for thorough and concentrated exhaustion of a drug by percolation, is so marked and decided, and the results obtained so wonderful, that it is certainly somewhat remarkable that they have not hitherto been noticed. The theoretical idea that long maceration would be beneficial, may have suggested itself to others as it did to myself a long time since, but its immense, unexpected practical importance has not been appreciated until these experiments of Mr. Campbell.

In order to test the subject more thoroughly, and to satisfy myself fully as to the importance and efficiency of maceration, the following experiments were instituted.

Three separate portions of yellow cinchona of four troy ounces each, in moderately fine powder, were carefully displaced with diluted alcohol; one portion having been allowed to macerate half an hour (according to the directions of the U. S. Pharmacopœia in making fluid extract of cinchona;) another portion having been allowed to macerate for 48 hours; while the

third portion was allowed to macerate for four days; the conditions of all being made as nearly alike as possible, in regard to temperature, packing, pouring on the menstruum, &c. The displaced tincture was carefully collected in portions of one fluid-ounce each; each ounce was then evaporated separately, and the weight of solid extract furnished by each ounce carefully noted. The following results were obtained:

Percolate No. 1.

The 1st oz. yielded of solid extract,	94	grs.
" 2d " " " " "	80	"
" 3d " " " " "	60	"
" 4th " " " " "	45	"
The first pint after this yielded of solid extract,	102	"
" 2d and 3d pints " " "	78	"
And 3 pints additional " " "	40	"
	499	

Percolate No. 2.

The 1st oz. yielded of solid extract,	185	grs.
" 2d " " " " "	90	"
" 3d " " " " "	65	"
" 4th " " " " "	45	"
" Pint after this yielded of solid extract,	115	"
	500	

Percolate No. 3.

The 1st oz. yielded of solid extract,	200	grs.
" 2d " " " " "	143	"
" 3d " " " " "	90	"
" 4th " " " " "	30	"
And 8 oz. after this, to exhaust, yielded	48	"
	511	

Upon examination and comparison of these results, it is found that the total yield of extract is almost identical in the three experiments. Four ounces of bark having yielded in one case 499 grains, in another 500, and in the third 511 grains of solid extract, being about 26 per cent.

The first ounce of percolate, after half an hour's maceration, yielded of extract,	94 grs.
The first ounce, after 2 days maceration, yielded	185 "
" " " " 4 " " "	200 "
The first 4 oz. of percolate, after one day's maceration, yielded of extract,	279 grs.
The first four oz., after 2 days maceration, yielded	385 "
" " " " " 4 " " "	465 "

Or upon comparing the first and third experiments, the first three ounces of percolate, after long maceration, yielded as much solid extract as three ounces and two pints additional after a short maceration. It will also be observed that, after four ounces of percolate had been obtained, eight ounces of menstruum exhausted the drug that had been macerated four days, more thoroughly than six pints, where it had been macerated for half an hour.

If, upon further investigation, it should be found that the exhaustion of some particular articles is not complete, the passage of a small additional amount of menstruum, and the reduction of the product by spontaneous evaporation to the required measure, would no doubt successfully accomplish the desired end.

The longest time allowed for maceration in any of the experiments made by Mr. Campbell, or myself, was four days. It is possible that in some cases even a longer maceration might be found desirable, but since the results of all the experiments tried were satisfactory, no further experiment as to time was tried.

From the results of the preceding experiments, it might be thought that the use of glycerin is superfluous, since diluted alcohol appears to be sufficient to exhaust the drug; yet I believe that in this and in many other cases, it is a valuable part of the menstruum; not only from its solvent, but also from its preservative power; but whether the proportion adopted is the best one, can be determined only by experiment. It is not probable that the same proportions would be desirable for all drugs.

In regard to fineness of powder for making fluid extracts, I believe that for all of the fluid extracts at present officinal in

the Pharmacopœia, a powder moderately fine, or one that would pass through a sieve No. 50, would be preferable to the one adopted by Mr. Campbell, which is moderately coarse, or one that would pass through a sieve No. 40. Almost any drug can be reduced to this degree of fineness, without involving much more labor or time than is required to reduce it to a moderately coarse powder. Of the 23 fluid extracts now officinal, in which fineness of powder is indicated, eleven are directed to be made from moderately fine powder (No. 50,) and twelve from fine powder (No. 60); these two grades being the only ones indicated.

When powders finer than No. 50 are directed they will rarely be prepared by the apothecary, but will be purchased from the wholesale druggist, or the drug grinder, and will consequently be much more liable to be inert, impure or adulterated than when powdered under the supervision of one who wishes to prepare his own extracts.

Two of the fluid extracts of the Pharmacopœia, viz., those of hemlock and ergot, have a small quantity of acetic acid added to the menstruum; and this is a very useful addition to those preparations when made according to the formula of the present Pharmacopœia. The main object of this addition is to give stability to the alkaloids during the process of concentrating these extracts by heat; it is also incidentally useful in promoting the solubility of the alkaloids, and in preserving the preparations when finished. These objects are all accomplished by the process of Mr. Campbell, without the addition of the acid. No heat being used in the process, all danger of destruction from this cause is avoided. The menstruum being sufficient to completely exhaust the drug, no addition is required, while the glycerin is perhaps a better preservative of the finished preparation than acetic acid.

As Mr. Campbell has well said, a fluid extract should represent the drug from which it is prepared, giving the constituents, as nearly as possible, as they exist in the crude drug; and although acidulated preparations of cinchona, opium, conium, &c., may be desirable, it is at least questionable whether acetic or any other acid, whereby the natural composition is changed,

is a proper addition in the preparation of simple fluid extracts of these substances.

Mr. Campbell, after moistening the drug upon which he is operating, packs it in a percolator and allows it to macerate therein for four days, after which he proceeds to displace the tincture. By this process the portion in the bottom of the instrument is subjected to a more thorough action of the menstruum than that near the top, and while the lower portion would be entirely exhausted, it might perhaps be doubted whether the upper portion was equally so, although long maceration seems entirely to loosen the soluble from the insoluble portion, while percolation merely washes out the soluble part so separated. I would suggest that the maceration should not be made in the percolator, but in a separate vessel, and that once or oftener during the maceration it would be advisable to thoroughly stir the mixture, since the upper part would naturally become dryer than the lower. By this means the maceration would be made more uniform throughout the mass, while at the same time there would be less danger of the menstruum running in particular grooves or channels. In the case of resinous or gummy substances, previous to percolation, I would recommend the addition of sand, washed sawdust, the residue of a previous operation, or some other inert substance, whereby a freer passage may be given to the menstruum, care being taken to have the mixture uniform, and the packing in the percolator being carefully attended to.

Mr. Campbell recommends the use of glass funnels or percolators in all cases, and it is probable that there are very few instances in which they will not answer a good purpose. From the experience I have had, however, in the use of percolators of various shapes, I believe that the best form of percolator is the section of a cone having about the following proportions: its length should be twice that of its largest diameter, and four times that of its smallest diameter. If made of glass, the smaller end should terminate in a rounded funnel with a short neck; if made of tinned iron, an ordinary funnel makes a very good termination.

In view of the great simplicity of this process, and the ease

with which fluid extracts can be thereby made, I strongly recommend it to the consideration of the Committee of Revision and Publication of the U. S. Pharmacopœia, believing that the best preparations possible can be thus obtained, and with the greatest economy of labor or expense.—*Proc. Amer. Pharm. Assoc.*, 1869.

GOLCOINE, GLYCONINE.

By Joseph Hirsh.

The bottle labelled glyconine excited some interest in the exhibition-room, at least as far as its name is concerned, and the frequently repeated question of what it was or meant may be my apology for mentioning it to this learned body. Under the name of golcoine, our literature mentioned, some two or three years ago, an ointment consisting of four parts of yolk of egg and five parts of glycerin, recommended especially as an application to sore nipples, where it not only exerted a decidedly healing influence, but did also not interfere with the suckling of the child, from the fact that it is neither poisonous nor disagreeable to the taste, while its great pliability and elasticity render it above all ointments applicable to this especial purpose.

Its recommendation by the pharmaceutical and medical press seems to have made but a faint impression upon the public, most interested in this matter, if I am to judge by the rapidity with which even its name was forgotten. Having sent a sample, labeled golcoine, to the last Exhibition of the American Institute of N. York, which I was prevented from attending personally, I had the mortification to learn, upon a later visit in N. York, that a prominent chemist of that city, who also exhibited chemicals at the present fair of this Association, had the bottle mentioned very carefully, but very promptly, removed from the exhibition-room, and thrust into some out of the way place, deeming this the smallest part of his duty as member of the Committee on Chemicals. He had, in his honest zeal, mistaken the name golcoine for glonoine, and though greatly irate at the carelessness on my part in exposing the valuable exhibition, together with the more valuable visitors and attendants, to the danger of glonoine or nitro-glycerin, the tragical end of the

bottle had also its exhilarating effect upon closer examination. Lately the same substance has been mentioned again, under the less suspicious name of glyconine, which though to me seems hardly expressive of the nature of the substance, since many others may, with equal right, claim this name, which expresses only their sweetness, unless we turn the philological somersault of affixing some value to the innocent conine ending of the word. If the writer had not such a respectful horror of authorities and established things, he would suggest *glycerodine* as the true expression of the nature of the preparation, since the constituents of the egg are all present, even if a great part of its albumen has been removed with the whites. Knowing from personal observation the usefulness of the article considered for the purpose recommended above, I would add, that time does neither destroy nor modify this healing effect of glyconine, even after an exposure of more than a year to atmospheric influence, which by *good* glycerine seems to be kept perfectly at bay, while without it the yolk, like all protein substances, is rapidly decomposed. This last fact, above all others, perhaps excluded the use of yolk in pharmacy, although it has been exceptionally employed in some disorders of the scalp, either in the shape of the entire yolk, or in that of the oil extracted from the same, as also in the shape of soap, which in Europe is manufactured to some extent.

This property of stability of this glycerole will recommend its general use as soon as it is more known.

Considering the constitution of the yolk, it occurred to me that this glyconine would form a very efficient dietary article, and would fill a vacancy which still exists, in spite of the different preparations of bran offered for sale in the drug market. They contain a large amount of nourishing proteine, but upon it alone their merit rests.

If we examine, on the other hand, the yolk of the egg, we find the yolk corpuscles and fat globules, the last named of which may be distinguished under the microscope by their less intense yellow color. These fat globules are very rich in phosphorised matters, which may be separated by extraction of the yolk with ether, which, upon evaporation and incineration of the

residue, leaves behind the superphosphates of the alkalies and of lime. The fat consists of oleine, margarine, mixed, according to Gobley, with a large amount of glycero-phosphoric acid, as also with cerebrin, also known as cerebric or oleo-phosphoric acid. This last named acid contains nitrogen and phosphorus, and is also found as a constituent of the brain. The presence of cholesterine, the fat of the bile, has also been determined in the yolk, which contains of it on an average 0·438 per cent.

Of the two pigments of the yolk, the yellow and the red, which both are soluble in alcohol, the red one contains iron. Besides this metal other minerals are contained in the yolk, as hydrochlorate of ammonia, potassic compounds, which greatly predominate over the chlorides and phosphates, found in the ashes only monobasic. The ashes contain as much as 70 per cent. of phosphoric acid, 1·45 per cent. of peroxide of iron, and about 0·55 per cent. of silica. Altogether we find here the constituents of the blood ready formed in the same proportion as they are contained in that fluid, besides some constituents of the brain and bile, which accounts for the easy digestibility of the yolk, its assimilation not taxing the digestive organs in as high a degree as a dietary article of a more remote constitutional resemblance. To complete this sketch of similarity we find the vitelline, a compound of caseine and albumen, easily soluble in even dilute solutions of the neutral salts, the presence of which in the yolk I mentioned, and easily convertible into peptones. As much as 17 per cent. of vitelline are present in the yolk. For practical use as a dietary preparation, I would suggest the addition of sugar to the glyconine, to render it dry and solid, while the addition of syrup would produce a pleasant tasting liquid preparation, which besides in its natural state, might be used as a vehicle for various drugs, as the tonics, &c.—*Proc. Amer. Pharm. Assoc.*, 1869.

MANUFACTURE OF SULPHIDE OF CARBON.

By M. Contet.

As a proof of the greatly improved mode of manufacture of this substance and its very extensive use, the author begins by stating that, in 1840, the kilo. of rectified sulphide of carbon

cost 50 francs (£2); in 1848, M. Deiss manufactured and sold it at 8 francs per kilo., and now it may be had wholesale at 50 centimes the same quantity. The apparatus now in use consists of vertical retorts made of the same kind of clay as is in use for glass-pots; these retorts are 1·8 metre high by 0·50 internal diameter, they are lined internally with a glaze composed of 130 parts of flint glass, 20 parts of carbonate of soda, and 12 parts of boracic acid fused together, and next pulverised and painted on the inside of the retorts with gum water (at the first heating of the retorts this mixture yields a glaze which entirely closes the pores of the material, thus preventing escape of vapors and gases); four of these retorts are set in one oven made of brick-work, and are heated by a properly constructed furnace; the retorts are provided with the necessary tubes for the abduction of the vapors of the sulphide of carbon, and the introduction of the charges of sulphur and charcoal; the operation once commenced is continuous, since the retorts last for at least six months; the consumption of sulphur per retort amounts to 125 kilos. in 24 hours, introduced in charges of 155 grms. each, every three minutes time; the vapors of the sulphide of carbon are collected and condensed in vessels made of zinc or sheet-iron, and shaped like flattened down casks, and entirely covered over with cold water constantly refreshed, while the contrivance is so arranged as to keep the sulphide under water also (its specific gravity is 1·265, and its boiling point 45°). The most suitable temperature for this manufacture is bright red heat; the raw liquid obtained has to be re-distilled, and this operation is conducted in large iron vessels, which contain some 5000 kilos. at the same time and communicate with six worm condensers; steam is used for heating by means of a serpentine-coiled set of pipes, and the liquid is heated to 48°; near the end of the distillation the temperature is raised to 100°, in order to drive off a raw product containing very much sulphur dissolved; in the distillatory apparatus some sulphur remains; which is removed and again applied; it appears that this industry has become very extended and is carried on with great success in France.—*Chem. News, Jan.* 7, 1870.

RENDERING COMMERCIAL SULPHIDE OF CARBON INODOROUS.

By M. Cloez.

The author states that, when sulphide of carbon is left for twenty-four hours in contact with half per cent. of its weight of finely-powdered corrosive sublimate, care being taken to shake or stir up this mixture, the mercurial compound combines with the substances which are the cause of the fœtid odor of this substance, and an insoluble compound is deposited. The liquid is carefully decanted, and, after 0·02 of its weight of a pure inodorous fat has been added (no reason is given for this addition), the sulphide is re-distilled with care by the heat of a water-bath. The sulphide thus obtained exhibits an ethereal odor, and is eminently suitable for the extraction of oils, fats, &c., from various substances, since, on evaporation of the purified sulphide, these matters are obtained in as fresh and pure a state as if the oils had been obtained by pressure.—*Chem. News, Jan.* 14, 1870.

PHARMACY IN CANADA, 1869.

By J. Baker Edwards, Ph.D., F.C.S.

The second annual reports of the two Canadian societies for the promotion of pharmaceutical science having just appeared almost simultaneously, a fitting opportunity is afforded of reviewing the general position of pharmacy in British America, and the efforts now being made to obtain restrictive legislation.

The first of these societies has assumed the somewhat ambitious title of the "Canadian Pharmaceutical Society." As, however, one of its leading objects was legislation, and this legislation could only extend to the upper province, it is obvious that the "Pharmaceutical Society of Ontario" would have been a more legitimate and correct title. I must, moreover, be allowed to express the feeling that the time-honored titles "Pharmaceutical Society" and "Pharmaceutical Journal" have been fairly earned by our "Alma Mater," and that provincial societies would do well to show their originality by adopting some other designation for their associations. This remark also applies to the Bill which has been brought before the Ontario Legislature,

and obtained a first reading. It is so closely a copy of the Pharmacy Act, that some of its provisions may not prove best adapted to the circumstances of thinly populated country districts. The Society proposes to undertake the work of education, and to fit up a laboratory, library, and museum; and its first year's class in chemistry has been very successful, about forty students having been enrolled, several of whom passed creditable examinations at the close of the session. It has also encouraged its country members by offering three prizes "for collections of indigenous medical substances of vegetable origin," competitors to be "*members of the Pharmaceutical Society*," (*sic!*). It has produced a useful monthly periodical, called the "Canadian Pharmaceutical Journal," which is, however, largely indebted to extracted matter. This has obtained a fair circulation.

The report does not give the number of members, but states that 129 were added during the year; from which we may assume the number to be from 300 to 350. These are principally country members, residing in the numerous small towns of Ontario. The prospects of this Society are very encouraging, and it will, no doubt, accomplish much good.

The constitution, aims, and resources of the Montreal Chemists' Association are modified by its circumstances; its members are almost entirely confined to this city, and it has a large number of Associate members. It has also undertaken the work of education, and has completed one session, during which a course of lectures on Materia Medica was delivered by Dr. Kollmyer, and on Chemistry by myself. About fifty practical students attended, with very satisfactory results.

The second year's courses are now about to commence, with an entry of about forty students. As these are all city *employés*, the number indicates a very general support. Our monthly meetings are also well attended, and practical subjects are brought forward and discussed.

In the matter of legislation we have prepared a Bill of a very simple character, which we expect to pass shortly. It constitutes a separate body, "The Quebec College of Pharmacy," for the purposes of registration, examination, and licensing graduates in

pharmacy, and prohibits the sale to the public of certain poisons of a dangerous character, except by persons duly qualified and registered under the Act.

There is very little pure pharmacy among the French Canadians, the French druggists generally being qualified practitioners of medicine. The Bill, therefore, chiefly concerns the English-speaking population, and will encourage the establishment of pharmacies in market towns where few now exist. In the province of Quebec, the power of examination in pharmacy is now vested in the College of Physicians and Surgeons of Lower Canada, though few avail themselves of the privilege. The movement is looked upon favorably by leading members of the medical profession, and we trust the result will be for the advancement of pharmaceutical education and status in the province.

Of our friends in New Brunswick and Nova Scotia, we hear and see very little. The long distances and sparse populations render our intercourse with them very limited, even now that Confederation is an accomplished fact. It is to be regretted that the Pharmaceutists of the Dominion cannot be enrolled into one body; but so long as all matters of education are in the hands of a divided provincial Legislature, this cannot be. The same difficulty is experienced in the States, and efforts are now being made there to assimilate the various State laws in reference to pharmacy. Every voluntary movement will assist towards general legislation, and we feel that the example of Great Britain will be most influential in placing pharmacy in its right position among all civilized communities.—*Pharm. Journ., Dec.*, 1869.

MEDICINAL ACTION OF PAPAVERINE.

Papaverine, one of the alkaloids of opium, which was stated by M. C. Bernard to possess no narcotic property, has been studied physiologically by MM. Liederdorf and Bresslauer. Their experiments were made on the insane. They find that papaverine exercises upon man a decided soporific action, and, at the same time, diminishes muscular activity. It reduces the frequency of the pulse in all cases, and its calming action is not

preceded by a period of excitement. It never causes nausea, vertigo, headache, or constipation, but, on the contrary, tends to reduce these symptoms. It generally acts slowly, about four to seven hours after administration. It may be given subcutaneously in the form of hydrochlorate. Dr. Stark fully confirms these observations; he administers it in doses of 1 to 2 grains by hypodermic injection, and considers it to be constant and simple in its action.—*C. H. Wood, F.C.S., in Pharm. Jour., London, Dec.*, 1869.

HISTORICAL NOTES ON MANNA.

By Daniel Hanbury, F.R.S.*

Whatever was the true nature of the substance provided for the sustenance of the ancient Israelites and termed by them *Manna*, that name has in subsequent ages been used to designate certain saccharine exudations produced in hot countries upon the stems, branches or leaves of trees, shrub, or herbaceous plants, belonging to various families. Thus in the peninsula of Sinai, a sweet substance called *manna* is exuded by a species of tamarisk; in Persia, a manna is produced by a small, thorny, leguminous plant, known to botanists as *Alhagi Maurorum;* and in Kurdistan, an evergreen-oak affords an analogous product. These substances have from a remote period been employed as food or medicine, and they are still found, though in small quantities, in the bazaars of the East. The Cedar of Lebanon, the Larch, a *Cistus*, and certain Australian species of *Eucalyptus* likewise yield, at certain seasons, saccharine exudations in more or less abundance; and those derived from the cedar and larch have occasionally been collected for use.

The manna of modern times is well known to have a very different origin, being a product obtained in considerable abundance from the stems and branches of a species of ash, cultivated in Calabria and Sicily. With this manna, Europe is wholly supplied, and it likewise finds its way into the markets of the East.

During some conversation last summer with my friend Dr. Flückiger of Berne, he drew my attention to this curious fact,—that in the early history of Sicily, no mention is made of manna

* From the Author's revised reprint from *Pharm. Journ.*, London.

as a production of the island. This induced me to look around for further information, the result of which has been the collection of a few notes on the history of this drug, which seem of sufficient interest to be presented to the Pharmaceutical Society.

In the first place, I must thank Colonel Yule, to whom I wrote, thinking that his familiarity with historical research, and actual residence at Palermo, might enable him to impart some hints for my guidance. But he has been good enough to render me still greater service in furnishing extracts from several authors whose works I might otherwise have overlooked.

With regard to manna which has fallen from the atmosphere, or, as it is termed, *Meteoric Manna*, the grand example is that described in the book of Exodus. Of this it may be safely affirmed that, accepting the Mosaic account as the simple narrative of a real event, no phenomenon is known which is at all adequate to explain it.

But there are other examples of meteoric manna which come fairly within the range of natural phenomena, and which it would be interesting to consider, did space permit. I may observe that the notion that manna is not the juice of a plant, but that it is of the nature of dew and falls from the sky, is very ancient, and still lingers in the East. In the case of the manna-ash, it was disproved by the Franciscan monks Angelus Palea and Bartholomæus ab Urbe Vetere, who relate how they caused some of the trees to be covered with sheets, so that nothing could fall upon them; and that notwithstanding this precaution, manna was produced as before.* But this reasonable conclusion was regarded as scarcely orthodox, and the learned Matthioli was at much pains to supply an explanation more, as he thought, in accordance with Scripture.

The special point, however, which I desire to discuss in this paper relates to the *period* at which ash-manna began to be collected. Manna is mentioned more or less particularly by most of the Arabian physicians with whose works we are more or less acquainted, but the allusions are all to Oriental manna and not

* Geoffroy, *Tractatus de Mat. Med.* II, 587. The whole disquisition of this author *De Mannâ solutivâ*, is replete with information.

to that of Italy or Sicily. This is manifest from the writings of Ebn Beithar,* one of the most eminent and learned men of his time, and a great traveller; and who, being a native of Malaga, would probably when speaking of manna have named that of Sicily, the more so as that island, having been for nearly 250 years under Saracenic rule, must have been familiar to the Arabs of Spain. Ebn Beithar is moreover in the habit of quoting extensively from other authors. He died about A. D. 1248.

One fact may be held to prove that the Saracens could not have been entirely ignorant of the production of manna in Sicily, and it is this:—There exists a mountain near Cefalu which is called by the Arabic name *Gibil-manna*, literally *Manna-mountain.*† Other mountains in the island retain the Arabic name of *gibil:* whether the word *manna* was affixed subsequently to the Saracenic occupation, or whether, as is more probable, the whole name was bestowed by the Arab population in virtue of the trees of the mountain yielding manna, is a point I am unable to decide.‡

In the 13th century, Sicily was under the dominion of the Emperor Frederic II, a sovereign who appears to have been very solicitous to develop its resources, as is proved by many documents extant, relative to the affairs of the island. Thus in a letter dated A. D. 1239, he directs that certain Jews settled at Palermo are to farm his date plantations at Favara, and to cultivate them after their own manner. He also writes about the cultivation of his vineyards and the introduction of indigo and senna, and of divers other plants of Barbary, not then known to grow in Sicily. But so far as I can discover, there is no allusion to manna.§

Pegolotti, an Italian who wrote a sort of mercantile handbook *circa* A. D. 1340, has a chapter on Messina and Palermo, but

*Ed. Sontheimer, 1840–42, I, 207, II, 533.

† Amico, *Lexicon typographicum Siculum*, III (1760), 242.

‡ Colonel Yule has remarked that Salmasius in his *Exercitationes Plinianæ*, alludes to Σικελικὸν μάννα as mentioned by the *Medici recentiores Græci*, but without specifying more particularly who they are.

§ *Historia diplomatica Friderici Secundi*, par J. L. A. Huillard-Bréholles, T. iv, 213; T. v, 571.

does not mention manna as a production of Sicily; yet in enumerating the articles sold by the pound at the former city, he names manna apparently as a foreign production, since he couples it with cloves, cubebs, rhubarb, mace and long pepper.

Further evidence of a negative sort is afforded by Giovanni di Antonio da Uzzano, who in his work called *Libro di Gabelli*, written *circa* A. D. 1442, mentions the exports of Naples and of Calabria as wine, oil, corn, cheese, salted meat, nuts, chestnuts, soap, and oranges, but makes no reference to manna.*

The earliest actual mention of manna as an Italian drug that I have found, is in the *Compendium Aromatariorum* of Saladinus, printed at Bologna in 1488. Saladina was physician to one of the Princes of Tarentum in Calabria; neither the date of his birth nor that of his death is known, but it would appear that he was living between A. D. 1442 and 1458; for he states that during his time, the King of Arragon punished his druggist at Naples by a fine of 9000 ducats and degradation from office, because the king's physicians having prescribed *white coral* as an ingredient of a cordial electuary, the druggist not possessing it, substituted *red coral*. This incident affords a clue to the age of Saladinus, for it was Alphonso V, King of Arragon, who laid siege to Naples, captured it in 1442, and died in 1458.

The work of Saladinus to which I have alluded, is a sort of handbook for the *aromatarius* or druggist, and is remarkable for much practical good sense. Besides numerous formulæ and descriptive notices of drugs, it contains a calendar enumerating the herbs, flowers, seeds, roots and gums to be collected in each month; and in terminating the list for May, there occurs the following passage:

"Collige etia in isto mese mana ta in oriete qm: in Calabria quia tunc ros ille preciosius de celo cadit."

* Pegolotti's work forms the third volume, and Da Uzzano's the fourth, of the book published anonymously by Gian Francesco Pagnini under the title of *Della Decima e di varie altre Gravezze imposte dal Commune di Firenze*, etc., Lisb. e Lucca, 1765–6, 4°, III, 99; IV, 96–98. Some valuable information on Pegolotti and his writings may be found in Col. Yule's *Cathay and the way thither*, Lond. 1866 (Hakluyt Society), Vol. II, 279.

Contemporary with Saladinus lived Giovanni Gioviano Pontano (A. D. 1426—1503), a celebrated historian, statesman, philosopher and poet. Among his numerous writings is a work entitled *Liber Meteororum*, in which there is a poem headed *De Pruinâ, et Rore, et Mannâ;* this effusion notices in very circumstantial terms the collection of manna by the peasants on the banks of the Crati in Calabria, describing the production of the drug in language which may be rendered thus:

* * * "There in the middle of summer, under a burning sun, while heat prevails and the cloven earth gapes—when no breeze is stirring, and the humid air is still, it [the manna] gradually exudes, and, condensed as a viscid fluid, runs into drops and thickens on the thirsty leaves—and, further hardened by successive suns, it acquires the appearance of wax, and the taste of honey. Such as the bees obtain by their instinctive art and mutual aid, this, nature produces for the medicinal use of mankind."

I subjoin the passage in a foot-note.*

In the second half of the fifteenth century flourished Raffaele Maffei, called also Volaterranus, a learned and voluminous writer, who among other works has left one entitled *Commentarii Urbani*, in which we find a sentence in the following words:†

"Manna nostra ætate cœpit in Calabria provenire: licet orientali inferior."

* Quinetiam Calabris in saltibus, ac per opacum
Labitur ingenti Crathis, qua cœrulus alveo,
Quaque etiam Syriis sylvæ convallibus horrent
Felices sylvæ, quarum de fronde liquescunt
Divini roris latices, quos sedula passim
Turba legit, gratum auxilium languentibus ægris.
Illic æstate in media, sub sole furenti
Dum regnat calor et terræ fiduntur hiantes
* * * * * *
Cum nullæ spirant auræ, et silet humidus aer
Contrahitur paulatim, et lento humore coactus
In guttas abit, et foliis sitientibus hærens
Lentescit, rursumque diurno a sole recoctus
Induit et speciem ceræ, mellisque saporem.
Quodque et apes præstant arte, ingenitoque favore
Hoc medicos natura hominum producit in usus.
Pontani Opera, Venet. 1513, *Lib. Meteor.* p. 113.

† Vollaterranus (Raph.) *Comment. Urbann*, Paris, 1515, fol., lib. 38, f. 413. I have not been able to consult an earlier edition of his works, published, it is said, at Rome, in 1506.

The significance of this I take to be, that manna first began to be collected in Calabria, within the author's recollection, but that it was not considered so good as the Eastern manna.

It is to be observed that Saladinus, Pontano and Maffei all speak of manna as a production of Calabria, and it is evident, I think, that for a long time the drug was afforded by that region, and not by Sicily.

Brasavolus, of Ferrara, describing the drugs found in the shops *circa* A. D. 1537, mentions manna as a production of Calabria.*

Matthioli (1548) remarks that of manna he has only seen two sorts, the Levantine and the Calabrian.†

Alberti, in his *Descrittione di tutta Italia*, published at Bologna in 1550, mentions manna as found in Calabria.‡

Garcia d'Orta (1563)§ and Christopher Acosta (1574)‖ describe different kinds of oriental manna, contrasting them with that of Calabria.

The *Ricettario Florentino* (edition of 1573) states that manna is of two kinds, namely, that of Syria, and that produced in the kingdom of Naples, especially about Cosenza in Calabria.

Still more significant is the fact that Fazelli, a well known writer on Sicily (1558), in a chapter on the productiveness of the island, boasts of its wine, oil, sugar, honey, fruits and saffron, but says not one word of manna, or the manna-ash.¶

The manna collected in these early times was undoubtedly that which the trees produced spontaneously, but it was neither abundant nor cheap.** That which exuded from the leaves was esteemed the best, and was called *manna di foglia* or *manna di fronda;* it is described as being in the form of solid, translucent,

* *Examen omnium simplicium*, Ludg. 1537, 8vo, p. 335.

† Comment. in Lib. I, Diosc. cap. 70.

‡ P. 198.

§ *Colloquios dos Simples*, etc., Goa, 1563, 4to, p. 132.

‖ *Tractado de las Drogas y Medicinas de las Indias Orientales*, Burgos, 1578, 8vo, p. 399.

¶ *De Rebus Siculis*, Dec. I, lib. i, ch. 4. *De Ubertate Siliciæ.*

** Fiore de Cropani in his *Calabria Illustrata*, Napoli, 1691, says (p. 253) that the *manna di fronda* has been sometimes sold, even in Calabria, at 50 *scudi* for 6 ounces.

white grains, resembling little grains of mastich, and having a sweet and agreeable taste. The second sort was that which flowed spontaneously from the trunk and branches, and was termed *manna di corpo;* while the third or commonest kind was that picked up from the ground.

Towards the middle of the sixteenth century, it was found that a much more copious supply of manna could be obtained by notching the bark of the tree, and this new method of procuring the drug began to be adopted.* But the innovation did not pass unnoticed, for in the year 1562 Marino Spinelli, being *protomedico* of the kingdom of Naples, set about inquiring as to the article sold by the druggists as *Manna:* and as he doubtless found it no longer corresponded with that of former days, he declared, in concert with other learned physicians, that it was by no means good; and further to enforce his opinion, he procured the issuing of a public edict, prohibiting the druggists, under a severe penalty, from using any other manna than that of the leaf. This law proved very injurious to the Calabrians; it was felt, also, to be both severe and unjust by many of the physicians, one of whom, Annibal Briganti, took up the question in a philosophical spirit, made many visits to the manna districts, and investigated the differences alleged to exist between one sort of exudation and another. This resulted in the discovery that manna, whether spontaneously yielded by the leaves or stem, or obtained from the latter by aid of incisions, is essentially the same substance and possesses like virtues. These observations were recorded by Briganti in a long discourse written in Latin, for which, I am sorry to say, he has had very little credit—for not wholly trusting his own judgment on a subject so grave and controversial, he sent his MS. from Chieti, where he lived, to another learned man, Donatus Antonius ab Altomari, of Naples, who so entirely approved of it that he immediately published the whole of it in his own name![†] Under the assumed authorship of Altomari,

*In Bauhin's edition of the commentaries of Matthioli, published at Basle in 1574, the practice of making incisions in the bark of the tree is distinctly alluded to, as being followed in Apulia and Calabria "*hac ætate.*"

†"*Senza pure un minimo segno di gratitudine.*" The account of this

we have then this essay as a quarto pamphlet of 46 pages, printed at Venice, in 1562, and entitled *De Mannæ differentiis ac viribus deque eas dignoscendi via ac ratione:* and, as if to give the work greater weight, it is in the form of an epistle addressed to Hieronimus Albertinus, Neapolitan prime minister of Philip II, a monarch whose connection with the English crown and Spanish armada has caused his name to be well remembered in our annals.

The custom of promoting the exudation of manna by wounding the stem and branches of the trees, must have occasioned a great increase in the production of the drug, a proof of which we have in the statement of Fiore (1691) that the sole district of Campana and Bocchiglioro affords annually 30,000 lb. with great profit to the gatherers, and 1100 ducats of excise to the government.* Of the period when the traffic in manna commenced in Sicily, I have no information. Paolo Boccone, of Palermo, mentions in his *Museo de Fisica e di Esperienzie*, which appeared in 1697, several localities in Italy whence manna is obtained, adding that *manna forzata* (that from incisions being thus called) is also produced in Sicily.†

In conclusion, let me recapitulate the points in the history of manna, on which I have endeavored to throw light:

1. That the manna known in Europe in very early times was probably all of Oriental origin.

2. That manna of the ash (*Fraxinus Ornus* L.) began to be collected in Calabria in the first half of the fifteenth century.

3. That the practice of making incisions in the tree in order to promote the exudation, was not commenced until about the middle of the sixteenth century, previous to which period, the only manna obtained was that which exuded spontaneously.

4. That although the existence in Sicily of a mountain called by the Arabic name *Gibil-manna*, would seem to indicate that manna was collected during the period of Mussulman rule in

shameless piracy is related with much moderation by Briganti himself, in his Italian edition of Garcia d'Orta, published at Venice in 1582 (p. 50). Consult also Toppi, *Biblioteca Napolitana*, p. 20.

* *Della Calabria illustrata*, Nap. 1691—1743, fol. p. 253.

† Obs. xiv, xv.

that island (A. D. 827 to A. D. 1070), evidence has not been produced to prove the fact—but that on the contrary, it appears that manna was gathered in Calabria long anterior to its collection in Sicily.—*Lond. Pharm. Journ.*, Dec., 1869.

PHOSPHORIC PLASMA.

By R. Rother.

In tendering to pharmaceutists the following suggestions for the convenient and practical production of this compound, the writer experienced some hesitation, cherished by slight misgivings as to its propriety in a scientific connection. * * * * Stability and facility are the two great distinguishing features that characterize this process, and its result. For the former we have nothing less than the inevitable and indispensable glycerin. For the latter we have the following:

Take of Phosphorus, one ounce.
Glycerin, 8 fluid ounces.
Starch, 4 "
Flour, 16 "
Water, 28 fluid "

Mix the glycerin, starch, and one pint of the water, in a capacious, cast-iron, enameled, evaporating dish, and heat the mixture, stirring constantly with a very flexible spatula until the plasma has formed; remove this from the fire, and stir, occasionally, until it is only warm, then add 8 fluid-ounces of the water, and the flour, and mix, thoroughly, by means of a stone-ware or wooden pestle, until a smooth, uniform mass is obtained. Take 2 ounces of this, add to it the remaining 4 fluid-ounces of water, and heat in a smaller evaporating dish, until sufficiently hot; add the phosphorus, in small portions at a time, and when this has entirely fused, stir with a flexible spatula, gradually adding some of the plasma, with constant stirring, and when of a proper consistence, incorporate it thoroughly with the remaining plasma. The writer now considers that pharmaceutists see the point, and, consequently, abstains from giving any further illustrations.

Chicago, Dec. 21, 1869.

—*The Pharmacist*, Jan., 1870.

SOLUTION OF CITRATE OF MAGNESIA.

By R. Rother.

In the above familiar title we behold the officinal synonym for magnesium citrate. That preparation, therapeutically so much esteemed, but pharmaceutically abhorred, which as viewed from the officinal stand-point, deservedly shares the aversion entertained by the pharmaceutical profession, whilst the opprobrium cast upon it is justly due to its inconstancy of composition and unstable character—results that are entirely attributable to the fallacy of the officinal edict.

Normal magnesium citrate ($Mg''_3 (C_6H_5O_7) 2$), when freshly prepared, is exceedingly soluble in water, but in moderately concentrated solution it rapidly undergoes a molecular change, and unites with seven atoms of water ($Mg''_3 (C_6H_5O_7) 2, 7 OH_2$). The insoluble combination thus produced is, consequently, thrown out of solution. But, in solutions similar to the officinal, owing to its moderate degree of dilution, this transformation is not instantaneous, but if once begun, rapidly progresses, until a limit is determined by the presence of the solvent; yet, only after the greater portion of the magnesium has been rendered insoluble and inert. The article is then, of course, in an unsaleable condition, and, not unfrequently, a serious loss to the conscientious pharmaceutist, whose integrity led him to misplace his confidence by a too strict adherence to the officinal code; but magnesium citrate, in this condition, is by no means a loss, since application of a gentle heat again restores its solubility. The solution, after being rebottled, possesses an indefinite permanence, altogether similar to the fresh preparation.

A moderate excess of acid is, also, of no avail, unless it be present in sufficient quantity to form the bimetallic salt ($Mg'' C_6H_6O_7$), which, however, is not the intent of the pharmacopœia, for, as in case of the officinal quantity, if the magnesium were reduced, and all the acid retained, an immoderate excess of this then virtually results, which would not fail to be therapeutically objectionable.

Knowing that the officinal formula is entirely unsatisfactory, it is not surprising to notice a rather strong disposition to dissent from it, and in the absence of a reliable guide, there is no-

thing more natural than that operators should follow their own inclinations in this respect. Hence, we see those who invariably adhere to the pharmacopœia, where such a possibility exists, prepare but a few bottles of it at a time, from day to day, as the demand requires. In this case the preparation is not finished until called for, when the final addition of the potassium carbonate is made. But this resort is very impractical, yet it is the only recourse for those who vow allegiance to the pharmacopœia. Others, out of ignorance, substitute magnesium carbonate for the oxide in the same quantity, and thus obtain a permanent solution of the bimetallic salt, with its excessive quantity of acid. Again, others see fit to reduce both acid and oxide, usually substituting carbonate for the latter, upon economical ground, although preserving the proportion of magnesium by the change. A solution about half the strength of the officinal keeps much better, in their experience.

Yet, by far, the greater number do not dispense magnesium citrate at all, but, under the pretence, and in bottles labelled magnesium citrate, variable solutions of sodium tartrate, or sodium citrate, either alone, a mixture of the two, or separately, but contaminated with insignificant admixtures of the corresponding magnesium salts, are largely thrown into market, and consumed with as much relish, and as, apparently, happy effects, as though it were the pure citrate.

Now, since the sodium tartrate and citrate are, therapeutically, similar to the corresponding magnesium salts, and in themselves stable preparations, and much cheaper products, there is no reason why they should not, officinally, replace, in whole or part, the pharmaceutically obnoxious magnesium compound. The universal desire is to obtain a permanent preparation that is, therapeutically, identical with the magnesium citrate, and can either replace, or pharmaceutically modify the latter.

We know that a solution about half the strength of the officinal is much more permanent, and that this permanence is rendered indefinite by a sufficient quantity of sodium citrate; and as sodium citrate is, therapeutically, identical with the former, and equally taseless, there exists no just reason that can prevent an officinal substitution to be made.

For this purpose 40 grains of magnesium oxide, equal to 91 grains of the carbonate, are replaced by an equivalent quantity of either mono or disodium carbonate, which would be 168 grains of the former, or 286 grains of the latter, and substituting 182 grains (equivalent quantity) of magnesium carbonate for the remaining 80 grains of the oxide. We can construct the following formula, which contains the compound $Mg'' Na C_6 H_5 O_7$.

Take of

Citric acid, in coarse powder,	457½	grains.
Magnesium carbonate,	182	"
Monosodium carbonate,	168	"
or Disodium carbonate, crystallized,	286	"
Monopotassium carbonate,	40	"

Essence lemon, a few minims.

Sugar, in coarse powder, one and a half troyounces.

Water, sufficient.

Dissolve the citric acid in six or seven fluid-ounces of water; to this add, gradually, the magnesium carbonate, first rubbed through a coarse sieve; when the solution is complete add, very gradually, the monosodium carbonate, or if the disodium carbonate is used, and in tolerably large crystals, the whole of this can be added at once, then, after effervescence has ceased, add the essence of lemon and the sugar; agitate until the latter is dissolved, filter and add sufficient water to the filtrate to make it measure 12 fluid-ounces; place this in a strong bottle of appropriate size; finally add the potassium carbonate, and cork securely.

In this formula magnesium carbonate is used, since it is of more uniform composition, much cheaper, and more convenient than the oxide. For various reasons crystallized disodium carbonate is preferable to the monosodic. It was also found equally convenient to employ sugar and essence lemon directly, rather than the syrup of citric acid. The formula when followed to the letter yields a very permanent preparation. But to attain indefinite permanence, and make surety doubly sure, the magnesium can be reduced one-half, and the sodium doubled.

CHICAGO, *December* 21, 1869.

—*Chicago Pharmacist, Jan.*, 1870.

THE PURIFICATION OF BROMIDE OF POTASSIUM.

MM. Robière et Herbelin have been engaged in examining a number of samples of bromide of potassium for iodine. The test they employ is to place several fragments of the bromide, moistened with water, upon a piece of glazed paper, and expose to a trace of bromine vapor. If iodine be present, the paper acquires a blue tint. The bromine vapor is poured from a little flask filled with asbestos, wetted with bromine water. When the quantity of iodine is great, the blue tint may be partially or completely masked by the brown tint of free iodine. To avoid this, the test may be modified as follows. A crystal of the bromide is pulverized and put in a watch-glass standing on a plate. A few drops of bromine are poured on the plate and the whole covered with a glass. The bromide is unchanged, if it is pure; or if it takes a slight yellow tint, it loses it very rapidly in the air. If it contains a sensible quantity of iodine, it becomes immediately brown, the iodine being displaced by the vapor of bromine. If it contains only minute traces of iodine insufficient to give a visible coloration, the salt is transferred to a corked tube and agitated with benzol. The liquid immediately assumes a rose tint easy to recognize.

To purify bromide of potassium completely from iodine, the the authors recommend to dissolve the salt in a small quantity of water, and then add, little by little, bromine water to the solution, heated to boiling, until it is present in excess. The liquid is then boiled and evaporated to dryness with constant stirring. The bromine is thereby perfectly deprived of iodine. It is then crystallized.

It has been since pointed out that, in the foregoing tests for detecting traces of iodine, the results may in every case be masked by the presence of any excess of free bromine. M. Duingt writes that if we introduce a little chloroform (or benzol or sulphide of carbon) into a solution of bromide of potassium containing $\frac{1}{1000}$th part of iodide, and then add drop by drop, shaking after each addition, some dilute bromine water, we see the chloroform at first assume a violet tint, become decolorized by the next addition, and ultimately take a yellow color when

an excess has been employed. At this point, if the chloroformic liquid be decanted, and treated drop by drop with diluted sulphurous acid, it will reassume its violet color. He recommends, therefore, that in testing bromide of potassium, after agitating a solution of the suspected salt with chloroform and some drops of bromine water, if no violet color has been obtained, the chloroform should be separated and shaken with dilute sulphurous acid, added drop by drop, in order to restore the violet color of the iodine if it is present.—*C. H. Wood, F.C.S., in Pharm. Jour., London, Dec.*, 1869.

THE POISONOUS ACTION OF PYROGALLIC ACID.

In a memoir on the use of turpentine as an antidote in phosphorus poisoning, M. J. Personne has expressed the opinion that phospohrus kills by absorbing the oxygen from the blood. Where the absorption of the poison is rapid, a true asphyxia is thus produced, which promptly causes death. According to this opinion, the turpentine acts by preventing the phosphorus from burning in the blood, in the same manner that it arrests its combustion at ordinary temperatures in the air. Being thus deprived of the power of removing the oxygen from the blood, the poison can be eliminated without causing any fatal derangement of the animal economy.

In order to test the accuracy of this doctrine, M. Personne has conducted some experiments with pyrogallic acid, a substance very different from phosphorus, but which resembles it in its power of absorbing oxygen very energetically, while in contact with an alkaline liquid. This acid was administered to two dogs; to one two grammes, and to the other four grammes were given in dilute solution.

All the symptoms of asphyxia were soon exhibited, and the animal manifested the same sufferings that result in cases of phosphorus poisoning. The animal which received the larger dose died at the expiration of fifty hours; the other ten hours later. The *post-mortem* indications were similar in all respects to those observable in cases of death from phosphorus.—*C. H. Wood, F.C.S., in Pharm. Jour., London, Dec.*, 1869.

ON THE ESSENCE OF SASSAFRAS.

MM. Grimaux and Ruotte have made an investigation into the chemical constitution of the oil of sassafras. This oil is colorless when first rectified, and becomes yellow by exposure to air and light. Its density at zero is 1·0815. It rotates the plane of polarization to the right. It is a mixture of a dextrogyre hydrocarbon and an inactive oxygenized principle. It also contains a very small proportion of a body which appears to be a phenol, and has the power of reducing nitrate of silver at the boiling-point. This body is separated from the essence by agitation with solution of potash. It may be reprecipitated by hydrochloric acid in oily drops, presenting a strong odor of eugenic acid, and assuming a bright green color with ferric chloride.

The hydrocarbon saffrene contains $C_{10}H_{16}$. It boils between 155° and 157° C.; and possesses a density of 0·8345 at zero.

Nine-tenths of the essence distil over between 230° and 236°; this portion is the oxygenated principle safrol, $C_{10}H_{10}O_2$. This body has not a rigorously constant boiling-point, because it resinifies slightly by the action of a high temperature. Safrol has a density of 1·1141 at zero, and remains liquid at —20°. It does not combine with the bisulphites. By the action of an excess of bromine it yields a solid crystalline pentabrominated derivative, $C_{10}H_5Br_5O_2$.—*C. H. Wood, F.C.S., in Pharm. Jour., London, Dec.*, 1869.

A TEST FOR ALCOHOL.

M. A. Lieben states that the following reaction affords the means of detecting small quantities of alcohol.

A small quantity of the suspected liquor is introduced into a test-tube with some grains of iodine and a few drops of caustic soda. The mixture is heated slightly, but without boiling; if alcohol is present, a yellowish crystalline precipitate of *iodoform* is deposited. He avers that $\frac{1}{20000}$th of alcohol dissolved in water can be thus detected.

By applying this test to the examination of ether, M. Lieben has found that it is very difficult to remove the last traces of alcohol from that substance by washing with water. To avoid so many washings he thinks it better to submit the ether to an oxi-

dizing mixture of bichromate of potash and sulphuric acid; then to remove the products of the oxidation of the alcohol by washing once or twice with water.

M. Lieben has also applied his reaction to the examination of urine after drinking alcoholic liquids. He can always detect alcohol in the first portions of the distillate.—*C. H. Wood, F.C.S., in Pharm. Jour., London, Dec.*, 1869.

GLYCERATUS.—A SUBSTITUTE FOR SIMPLE SYRUP.

By H. Treverton Bond.

Allow me to suggest the following preparation, which I have christened "Glyceratus," as an article that in many prescriptions can be used with advantage in place of simple syrup.

Take of Glycerin,	one pint,
Water,	two pints.

Mix them.

The objections to simple syrup are too well known to need mention, while the great solvent power of glycerin (see U. S. Dispensatory, p. 419,) render it far superior in many instances. This preparation undergoes no change, and can be readily made.

If the syrup in various ferrated elixirs be replaced by "Glyceratus," the tendency to change either by precipitation or darkening will be found to be entirely obviated, or to exist in but a very slight degree.

Wheeling, West Virginia, Feb. 14th, 1870.

PREPARATION OF HYDRATE OF CHLORAL.

By M. Stadeler.

Liebig prepares chloral by passing dry chlorine into absolute alcohol, and gradually increasing the heat until chlorine ceases to be absorbed. 8 oz. alcohol require a rapid and continuous current for at least twelve hours. The residue, which generally crystallizes, is agitated and gently heated, with twice or three times its volume of concentrated sulphuric acid; the crude chloral is separated, and by boiling for some time and by rectification over lime it is freed from alcohol and muriatic acid, the distillation being stopped when the liquid no longer covers the lime.

Chloral is an oily, colorless liquid, of a penetrating odor, and somewhat biting taste; it boils at 94° C. without decomposition. Mixed with little water, heat is evolved and hydrate of chloral produced, forming a colorless mass consisting of acicular crystals; these crystals are soluble in water; the solution possesses odor and taste of chloral, and on evaporation over sulphuric acid yields large rhombic crystals of hydrate. Heated with alkalies it is decomposed into chloroform, metallic chloride and formiate of alkali.

Städeler's method is as follows: 7 parts of muriatic acid are gently heated with 1 part starch until the paste is converted into a liquid; 3 parts black manganese and a little table salt are then added; the mixture is rapidly heated to boiling when the fire is at once removed. The mass foams considerably, giving off carbonic acid and continuing to boil for some time. After boiling ceases, heat is again applied until the distillate ceases to be rendered turbid by strong potash lye. The oily drops floating upon the surface are carefully removed, the liquid is saturated with table salt and distilled, the distillate being again carefully freed from an odorous sulphur yellow oil. The distillation over table salt is repeated several times, to obtain a concentrated aqueous solution of chloral, which is saturated with chloride of calcium and rectified from an oil bath, when the hydrate distils as a colorless liquid which soon congeals. On mixing the hydrate with four times its volume of sulphuric acid, chloral is separated as a colorless liquid, which is freed from muriatic acid by slow boiling. This purified chloral, mixed with water, yields pure hydrate of chloral.—*Zeitschr. d. oesterr. Apoth. Ver.* 1869, 524.

BALATA.

By A. Sperlich.

For some years past an article has been met with in commerce under the name of balata, which has properties intermediate between caoutchouc and gutta percha, and is used for similar purposes. Balata is prepared from the milky juice of the bully tree, *Sapota Muelleri*, *Sapotaceæ*, which is indigenous to Guyana, the product being exported to Europe mainly from Berbice.

Balata contains only few per cent. of oxygen, and therefore was supposed to be mainly a carbohydrogen, mixed with an oxygenated body. Cut into small pieces, crude balata was boiled with slightly acidulated water, which removed a small quantity of a yellowish brown coloring matter. The residue dried yielded to boiling absolute alcohol a colorless resin. The undissolved portion after drying was digested with bisulphide of carbon, and gradually dissolved to a colorless liquid, leaving a little of a brown ligneous body behind. The white transparent film left on distilling the bisulphide of carbon was repeatedly boiled with spirit of ether, then dried and analyzed; it contains 88·49 carbon and 11·37 hydrogen, nearly the same figures which Adriani obtained for pure gutta percha.

In the dried milky juice of the bully tree, the author found 81·31 carbon and 10·17 hydrogen; the balance is ascribed to oxygen.—*Zeitschr. d. allg. oesterr. Apoth. Ver.*, 1869, 525, *from Sitzungsber. d. Kais. Akad. d. Wiss.*, lix.

Editorial Department.

Case of alleged Aconite Poisoning in San Francisco.—Several pharmaceutists having forwarded to the Editor copies of newspaper articles in which the circumstances surrounding a case of alleged poisoning are stated pro and con, we are at a loss to decide whether it should be noticed at all at this late period; nevertheless, after a careful weighing of the evidence as therein produced by both the coroner and the druggists, we believe the cause of truth may be served by giving a brief account of the case.

On the morning of Sunday, Dec. 12th, 1869, George Murray Thompson, a young lawyer of San Francisco, met his physician, Dr. Bates, on the street, and they went together to the lawyer's office at his request, and the physician finding him nervous, with symptoms tending toward *mania a potû*, gave him the following prescription:

"℞. Tincturæ Lupulinæ.

Extracti Valerianæ Fluidi,	*aa* f℥j,
Extracti Scutellariæ Fluidi,	f℥ss,
Aquæ Camphoræ,	f℥iss,
Sacchari,	℥ss. M.

Sig.—Dose, a tablespoonful every three hours, to produce sleep. Dr. Bates."

Mr. Thompson decided not to use the prescription until evening, accepted an invitation to dine at Mr. Carr's, and afterwards accompanied a lady to church, returning at 9 o'clock, P.M., when he went to Mr. Burnett's drug store and had it compounded by William P. Hedges, his chief clerk. In about half an hour he returned, saying the medicine was too strong for him, and desired to be relieved by a stomach pump. Dr. Quinlan happening to be present, and being made acquainted with the prescription, advised Thompson to go home, he would soon be better. Dr. Q. accompanied him to a hotel, where he was seized with spasm, and the clerk refused him a room. Dr. Q. then sought a carriage, but returned without one, found the patient "twisting and turning" with pain, and gave him brandy, which was instantly rejected. He died about 11 o'clock, previously suffering intense pain. Dr. Q. thought the cause of death was "cerebral difficulty caused by liquor." The bottle containing the remainder of the medicine was taken from the pocket of the deceased and sealed up, at Dr. Q.'s request, at the hotel.

The Coroner, Dr. Letterman, states that the bottle was received, with the body, by his clerk, that it was two-thirds full, and that it was not opened until, before leaving it for the chemist, Mr. Howden, at Wakelee's drug store, he opened it there in the presence of four witnesses, who each tasted its contents, and, from its physiological effects, were each satisfied that aconite was in it, and then resealed the bottle. Mr. Howden is the chemist at Wakelee's laboratory, and is employed by the coroner.

Mr. Howden stated in substance that he had received the stomach in a jar, and the bottle of medicine, sealed; one-half of the latter, in the original bottle, was returned to the Coroner. The contents of the stomach, amounting to five ounces, were turned into a porcelain dish, and the organ itself well washed into the dish with twelve ounces of alcohol, containing some acetic acid. They were digested for two hours with occasional stirring, filtered, the filtrate evaporated on a water bath nearly to dryness, the residue treated with water, filtered and evaporated carefully to a drachm, ammonia added in excess, and the mixture treated with repeated portions of ether, decanting the ether each time. The ethereal liquid was then evaporated to dryness, and the residue contained aconitia, and had the peculiar effect of aconite when tasted. One-thirtieth of a grain of it killed a kitten in twelve minutes. The mixture in the bottle was treated in the same way, and gave a similar result. The inference was therefore strong that the contents of the bottle had caused death.

We have nowhere seen a copy of the verdict of the coroner's jury, but from the published proceedings of the meeting of the California Pharmaceutical Society it may be inferred that it was to the effect that George Murray Thompson came to his death from the effects of aconite, put in a mixture by mistake on the part of the clerk, Mr. Hedges.

The meeting above referred to met on the 27th of December, and its object was "to investigate the charges preferred against one of its mem-

bers by the recent action of the coroner's jury in their verdict as to the cause of the death of George Murray Thompson." Mr. Burnett was called upon to state the case, which he did much as in the fore part of this notice, and then testified to the careful habits of and his entire confidence in Mr. Hedges. Dr. Bates stated that he had prescribed for Mr. Thompson as a case of incipient *mania a potû*. Dr. Quinlan stated that when he first saw Thompson his pulse was 100, that he considered him suffering from *delirium tremens*, and that he died of *the same*. He did not believe that aconite could be found in the medicine, and offered to wager $500 that no chemist can extract aconite from a mixture. He reflected strongly on the coroner, charging him with malpractice, and blamed the chemist for not reserving a portion of the stomach and contents.

Dr. Grey had seen two deaths from aconite, and in both cases the pulse became almost imperceptible before death.

Prof. Price said that a chemist could separate aconite from anything admixed with it, but afterwards he could only recognize and identify it by its effects physiologically.

Mr. Burnett asked why the chemist looked for aconite instead of morphine, and said he should not be blamed for the contents of that bottle after it had been in Wakelee's drug store, and thought it preposterous, at the same time disclaiming any intimation that Wakelee had tampered with it, though he was positive some one had.

After some further discussion, the Society passed the following resolutions:

"*Resolved*, That after due investigation as to the matter of the death of George Murray Thompson, this Society believes that his death was not the result of a mistake in compounding the prescription, as alleged by the coroner's jury.

"*Resolved*, That we deprecate the action of the coroner in accepting unsworn testimony before an unscientific jury, without giving the apothecary, who was indirectly implicated as having caused the death, an opportunity of shaking the evidence by cross-examination or counter-testimony."

In reviewing the evidence and facts as stated, and assuming that Mr. Hedges was innocent of a mistake (and that is the ground taken by the Pharmaceutical Society), it would have been right to have sought in the mixture for all the ingredients proper to it. If they were all there,—and all but the scullcap could be readily detected by sight, taste and smell,—the inference would have been powerfully in favor of the innocence of Mr. Hedges, and of the introduction of the poison in some other way. But if it had been proved that the lupulin, the valerian, or even the scullcap, was *not* present, it would have been a strong evidence that Mr. Hedges had inadvertently substituted aconite for the missing ingredient. In his evidence before the coroner, Mr. Hedges testified "that the prescription was composed entirely of vegetable productions," and was not questioned as to what he did put in; nor was Mr. Hedges in evidence

before the Pharmaceutical Society when the matter was investigated. Some may consider it strong presumptive evidence of innocence on the part of Mr. H. that he did not himself doubt his having dispensed the prescription correctly so far as to examine the medicine by taste and smell, but in our opinion *he should have done so in any case*, if only to convince the patient that he was sure all was right. If he had done so in this instance he would instantly have detected the aconite, and the life of Mr. Thompson might in all probability have been saved by emetics, or, as he had asked, by the pump and auxiliary treatment, a physician being on the spot. After nearly forty years' experience at the dispensing counter, we are more and more impressed with the truth that the price of safety in dispensing is unceasing vigilance on the part of the dispenser, and that none of us are invulnerable to a mis-step.

As regards the testimony of the principal medical witness, we are not surprised that it should be set aside by the Coroner's Jury in their verdict. He was with the patient at the drug store, where he could have examined the medicine and got at the truth; but it does not appear that he did so, or that he even suspected the probability of an error, and the man died in his presence without an effort to save him, although the sufferer had pointed out the way in a manner calculated to arouse his suspicion of poison. His wager, that no chemist could extract aconite from a mixture, was in character. It is an unjust reflection on chemistry, and is untrue. Aconitia can also be detected by tests, which, though applicable to some other bodies, are, when taken in connection with the physiological test, strongly characteristic and not to be set aside.

As regards the action of the Society in the premises the testimony was all on one side, and the resolutions naturally flow from the testimony. If the meeting was called to protect a fellow-member from the imputative action of a coroner's jury it was in character; but if it was intended to investigate the truth of the verdict (and this should have been its object) it seems to be proper that the testimony should have included that of Mr. Hedges, the only person beside the chemist who could be expected to know what was in the mixture.

We cannot let this matter pass without saying that it is no part of a coroner's jury to condemn or defend an individual situated as Mr. Hedges, but only to endeavor to get at the true cause of death.

THE LIST OF MEMBERS AND GRADUATES OF THE PHILADELPHIA COLLEGE OF PHARMACY, printed in the pamphlet accompanying the January number, has been found to be imperfect, several names having been accidentally omitted. This is greatly regretted by the Committee having the matter in charge, especially as several prominent early members are among the omissions. The Editor has been requested to state that a thorough revision of the records of the College will be made as early as practicable, and a revised list published.

THE SALE OF ALCOHOL BY APOTHECARIES.—Cannot something be done to relieve apothecaries from the necessity of taking out a liquor license in order to sell alcohol for the numerous proper and useful purposes to which it is applied wholly unconnected with its use as an ingredient in beverages? According to the ruling of J. W. Douglass, Acting Commissioner, in November last, "druggists and apothecaries cannot sell alcohol in quantities exceeding half a pint at one time, nor can their sales of alcohol, including their sales of other spirits, exceed in aggregate cost value the sum of $300 per annum, without liability to payment of a special tax as liquor dealer." According to the letter of this rule an apothecary *may* sell any officinal liquor in quantity not exceeding half a pint, and in annual value not exceeding 300 dollars. According to another ruling, potable liquors can only be sold by the apothecary when prescribed by a physician, unless he has a license. Which is true?—The law certainly should leave the apothecary sufficiently untrammelled to serve the proper need of the sick.

THE ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.—The attention of those of our readers who are interested is requested to the following:

The second annual reunion of the Alumni Association of the Philadelphia College of Pharmacy will be held on Monday evening, March 21st, 1870. A cordial invitation is extended to members throughout the country. Those desiring to attend will please notify the Secretary at once.

Any communications intended for that occasion must be sent to

CLEMMONS PARRISH, Secretary,
800 Arch St., Philadelphia.

SCHOOL OF PHARMACY. ANNUAL COMMENCEMENT.—The lectures having closed and the examinations in progress, it may be stated that the commencement ceremonies will be held in the Academy of Music, on the evening of March 22d. The Valedictory by Prof. Bridges.

Proceedings of the American Pharmaceutical Association at the Seventeenth Annual Meeting, held in Chicago, Ill., Sept. 1869; also the Constitution and Roll of Members. Philad., Merrihew & Son, 1870: pp. 468 octavo.

"The Proceedings" came to hand about the second week in February, and in the execution of the volume as regards printing, paper and binding, are creditable to those concerned in getting it out. The preliminary portion, or minutes of the meeting, which embodies nearly the whole of the phonographic report of Mr. Slade, is full of interest, and will supply those who did not attend the meeting with a full and connected account of it. Mr. Slade is a most excellent reporter. The Report on the Progress of Pharmacy, by Dr. Frederick Hoffmann, of New York, is an elaborate work o 161 pages, full of interesting details of great value

to those seeking hints as to what has been done for pharmacy during the previous year, and where to find it. We have no space to enlarge on it, but must approve of the fullness given to it, which enables the reader to form, in many instances, a fair idea of the papers alluded to. We consider it highly creditable to the ability and perseverance of Dr. Hoffmann, and we think his name might well have been appended to it by the Editor, as is usual with such reports, as the modesty of the author nowhere makes his name appear.

The Report on Specimens, by Mr. T. Whitfield, is an enumeration of the specimens on exhibition. The Committee does not attempt an analysis of the merit of the exhibition, being prevented by the brevity of the period at their command for examination, and they suggest that in future occasions of the kind, the Association should devote the time of one session solely to the personal examination of the articles exhibited, to prevent absence from the meeting for that purpose as well as to do justice to the exhibitors, who go to great trouble and expense to make their contributions.

The Report on the Pharmacopœia, by Dr. E. R. Squibb, occupies fifty printed pages. It is an individual report, for which the reporter only is responsible, and has been a work of much labor, based on the constantly recorded observations of the author during the past ten years. The remarks on the preliminary notices embrace many useful hints for the coming revision. The metrical system of weights is advocated, as is the abandonment of measures of capacity. The manipulation of percolation has to be so modified to meet the physical condition of drugs in relation to solvents that the reporter doubts the propriety of directions for universal application, and that each preparation should be specially explained in this regard.. In commenting on the Materia Medica the report makes the most sweeping recommendations of dismissal, which include 57 articles in the primary list and 70 in the secondary. We consider the reporter occupies the wrong standpoint to judge of what should constitute the Materia Medica list for a population and a medical profession embracing so many nationalities; not to speak of that numerous body called country practitioners, who often set great value on indigenous remedies. That which will suit the circumscribed condition of the army and navy is wholly unsuited to meet the daily wants of a pharmacy whose prescriptions take a wide range, We therefore think the Association very properly disclaimed an approval of this part of the report. The reporter's comments on the processes of the Pharmacopœia possess many valuable hints, the result of careful study, and which deserve careful notice by the forthcoming Revisional Committee, yet there are not a few suggestions that will not be approved of by many.

Mr. Faber's report of the doings of the International Pharmaceutical Congress, at Vienna, is full and interesting. In regard to the Special and Volunteer Reports, we believe they are neither so numerous nor so

valuable as in some former years. Quite a number of them have been reprinted in this Journal, and will speak for themselves.

We cannot leave this notice without expressing our regret at the prospective resignation of Prof. J. M. Maisch as Permanent Secretary. The qualification for the post is not easily met with, and even the best have to serve an apprenticeship of years to become familiar with the routine of the service. We hope that Prof. M. will be persuaded to withdraw his resignation and that some part of his duties will be laid on other shoulders.

Proceedings of the American Philosophical Society. Vol. XI, No. 82. This number extends from June 18th, 1869, to Dec. 17th, 1869, and embraces a number of interesting papers on natural history, astronomy, geology, meteorology, Indian relics, etc., but the paper most interesting to pharmaceutical readers is that of Prof. H. C. Wood, Jr., "*On the medicinal activity of the Hemp Plant as grown in North America,*" a prize essay read before the Society Nov. 19th, 1869. It has been considered that the peculiar resin of the tops and leaves of Cannabis sativa, so much esteemed in medicine, is only developed in quantity in the warmer countries of Asia. In fact an experiment made by us a few years since on hemp leaves grown in Philadelphia proved them to contain but little resinous matter. Dr. Wood, however, obtained "male plants grown for the purpose of fertilizing seeding female plants, and which, having fulfilled that office, were of no further value to the cultivator," being furnished by R. B. Hamilton, Esq., of Lexington, Ky. Dr. Wood treated half an ounce of the powdered leaves with alcohol, and by evaporation obtained an extract. He took between 20 and 30 grains of this extract at a dose, which, after several hours, produced the effects characteristic of the Indian hemp in such a forcible manner that it should be called poisoning, commencing with a joyous elevation of spirits and passing into other and alarming symptoms, the most distressing of which was a feeling of impending death, &c., &c. The physiological details reported by the author and his friend, Dr. Thomas, who attended him during the paroxysms, are sufficiently interesting, but the space at command here is so brief that we must pass them by to state that subsequent pharmaceutical trial with the Kentucky hemp tops and leaves afforded four or five per cent. of resin deprived of extractive by means of carbonate of soda. This was tried and found active in three-fourths of a grain. Subsequently Messrs. Hance Brothers & White prepared some of the resin after the manner of Messrs. T. & H. Smith, of Edinburg, which in one-fourth gr. doses produced decided therapeutic effects. Dr. Wood infers from his results that the male hemp plants of Kentucky are capable of replacing the East Indian drug, and that the hemp resin only should be recognized by the Pharmacopœia, prepared by a method analogous to that of the Messrs. Smith, of Edinburgh. It is a matter of much interest to have the pharmaceutical part of the subject fully investigated by a

competent pharmaceutical chemist on the spot, as to the proportion and quality the resin afforded by the male and female hemp plants to the Kentucky and Missouri hemp regions. If Mr. Lewis Diehl, of Louisville, Ky., would undertake this and report his results to the Association next September, he would greatly aid in getting a solution of the question, whether the development of hemp resin is influenced by the gender of the plant, or whether it is soil, climate, or other circumstances. We may state that the hemp tops and leaves of our experiment (see Amer. Jour. Pharm., 1865, p. 23) above alluded to, were collected in August, 1864, from seed-bearing plants six feet high, grown near Coates and Broad Streets, in Philadelphia. Dr. Wood, alluding to the supply for pharmaceutists, says, "the male seeding plants in Kentucky, after they have shed their pollen, are worthless. It was with such plants the experiments were instituted. A considerable supply of them might be obtained, so Mr. Hamilton writes me, for little more than the expense of gathering them, or if the demand should exceed the amount of such male plants the leaves of the female plants when ready to cut for the fibre might be obtained on the same terms.

The Cell Doctrine: its history and present state. For the use of students in medicine and dentistry. Also a copious biography of the subject. By James Tyson, M.D., Lecturer on Microscopy in the University of Pennsylvania, &c., &c. With a colored plate and other illustrations. Philad.: Lindsay & Blakiston, 1870. Pp. 150, 12mo.

This volume has been the result of much research into the literature of the subject, guided by an earnest desire on the part of the author to present the fruits of his labor in a form adapted to greatly aid the student of physiology and pathology "He has sought to obtain a continuous history of the 'cell doctrine' up to its present state, without embarrassing his pages with a large number of isolated facts. He has attempted, however, to secure a completeness, and to make the work useful to physicians and others engaged in research by careful references and the addition of a bibliography which he has sought to make accurate and extended."

A glance over the work will convince the reader that the author has fulfilled his prefatory promise, and has produced a condensed historical account of the early and later observations and speculations or theories which have marked the gradual development of the present idea of the growth of organic bodies from cell nucleoli, as exposed by the microscope. It is curious to follow the chain from Galen to Schleiden and Schwann, and from these to the present time, when the more perfect views of Huxley, Virchow and Beale prevail among physiologists. The book is beautifully printed on excellent paper, is neatly bound, and reflects credit on all concerned. Price, two dollars.

Chemistry: General, Medical and Pharmaceutical, including the Chemistry of the British Pharmacopœia. By John Attfield, Ph.D., F.C.S.,

Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain, &c., &c. London: John Van Voorst, 1869. Pp. 624, 12mo.

In March, 1867, the first edition of this work was noticed under its name, "An Introduction to Pharmaceutical Chemistry," in 446 pages, and the reader is referred to that notice for the general character of the present volume. It speaks well for this "Chemistry" that a second edition has been so soon demanded, and the fact that its size has increased from 446 to 624 pages assures us that this is not a mere reprint of the first edition. Little is to be learned from the author's preface of the changes or additions, but in looking the work through the reader will find that many parts are re-written, others extended by addition, and in a few instances mere notices have been expanded into chapters, as, for instance, the fatty oils, the resins, and the coloring principles. The chapters on alkaloids and glucosides have been much improved, as has that on the alcohols. The chapter on weights and measures and specific gravity has been increased, and the metric weights strongly urged for general use. The chapters on volumetric and gravimetric analysis are less changed than the other parts, but the appendix of tables has been extended from eight to twenty-three pages, including many of great use in practice.

Another feature of this edition is that the "questions and exercises" are placed immediately after the chapters to which they refer, instead of all together in the Appendix,—a change for the better which the teacher and student will appreciate. On the whole, it may truthfully be said of this edition that Dr. Attfield has increased its scientific accuracy, extended its scope, and improved its adaptation as a manual of practical chemistry for pharmaceutical and medical laboratory students.

Proceedings of the First Annual Meeting of the California Pharmaceutical Society, held at San Francisco, Oct. 11th, 1869; also the Constitution and roll of members. San Francisco, 1869; pp. 27, octavo.

This pamphlet presents a creditable exposé of the doings of this new Society at the first general meeting after its organization. The chief part is occupied by a report of the Executive Committee, consisting of Messrs. Calvert, McBayle, Burnett, Miller and Steele, from which we learn that the number of dispensing drug stores in San Francisco city and county is eighty-eight, and wholesale stores five; that the importation of *foreign drugs* for the year ending October, 1869, was about a million of dollars. The following extract from a communication to the Society from Dr. Wooster, U. S. Drug Examiner, suggests a new topic: "The Chinese import a large amount of simples, and they are much better packed than similar articles coming from Europe. It occurs to me that if a committee of American druggists should examine Chinese importations, they would find many articles which could be imported from China at a better margin of profit than from Europe."

The Flora of California is interestingly noticed. More than eighty botanists have visited California between 1792 and 1865. More than 1800 species have been found, more than fifty of which are forest trees, and many others medicinal and deserving of analytical investigation. The report speaks of the growing evils from excessive competition in trade, and of the necessity of more care in the sale of poisons. The establishment of a school of pharmacy is advocated. Suggestions relative to the revision of the Pharmacopœia occupy a part of the report, advocating the idea of remembering California in the adaptation of the materia medica and preparations to the wants of the United States; and suggest a list of preparations needing revision. The reporters also suggest that a fusion of the United States and British Pharmacopœias would be an advantage,—a suggestion made (we believe) without due consideration of the premises involved, and which would certainly not improve our own code in the direction of American ideas of pharmaceutical reform.

The metrical system of weights and measures is advocated, a more decided attention to preliminary education in the choice of apprentices urged, and a peroration tending to stimulate liberal views, and to suppress rivalry and jealousy in business. There is also appended to the report a list of queries to be reported on at the next meeting (in the manner of the Association), which may call forth much useful information. So good a beginning deserves the encouragement of all well-wishers of pharmacy, and our mite is fully and cordially extended. The Society is composed of ninety-four members and four honorary members. All but eleven of the present list of members are in San Francisco.

On the effects of Opium and its derivative Alkaloids, by S. Wier Mitchell, M.D. Published in the American Journal of the medical sciences for January, 1870; pp. 16.

This paper, originally read before the Academy of Natural Sciences, is devoted to the study of the physical action of the opium alkaloids on birds, more especially on pigeons, ducks and chickens, describing a large number of experiments on these animals with some remarkable results, which may be summed up in the following conclusions, for which only we have space, viz.:

1. "Birds: namely, ducks, chickens and pigeons are never poisoned by crude opium, its extract, or acetum opii (black drop) given internally; whilst the salts of morphia must be given in enormous doses to produce fatal effects when administered in the same manner.

2. *Morphia* salts, used hypodermically in excessive amounts, never cause sleep or stupor, but act as excitants (convulsants) upon the motor centres. In some instances the spasms are tetanoid in character; but in the duck they approach nearest to the typical strychnic spasm.

3. *Thebaia* is a tetanizing agent, only inferior in energy to strychnia and brucia.

Narcotina, almost inert in man, destroys birds when employed hypodermically, in doses of from 2 to 7 grains.

Codeia is a fatal convulsing agent in birds (pigeons).

Meconin causes emesis when given internally, and is harmless placed under the skin.

Narcein has no perceptible influence except to disturb slightly the respiratory functions.

Crytopia in doses from a fifth to half a grain, no effect.

None of the agents cause sleep in the pigeon, duck or chicken."

That narcotina should be a bird poison is a remarkable new fact developed in these researches. The whole paper is full of interest, and is readily accessible in the journal above quoted.

On the physiological action of the alkaloids Viridia, Veratroidia and Resin of Veratrum Viride, and of the Veratria of commerce. By Horatio C. Wood, Jr., M.D., &c. Published in the Americal Journal of the Medical Sciences for January, 1870; pp. 18

It will be remembered by our readers that the paper of Charles Bullock, published in the 37th volume, 1865, page 321, of this journal, and continued in the 38th volume, 1866, page 97, announced the isolation of two distinct alkaloids in veratrum viride, (which, by the by, Dr. H. C. Wood has incorrectly attributed to the Proceedings of the American Pharmaceutical Association.) These alkaloids have been named *viridia* and *veratroidia* by Dr. G. B. Wood, in the 13th edition of the United States Dispensatory, now about issuing from the press, and Dr. H. C. Wood has undertaken the study of them in the paper above announced. The results are summed up as follows:—

1. " *Viridia* appears to be but slightly, if at all, locally irritant.

2. It has no action whatever upon the alimentary canal; never producing either vomiting or purging.

3. It exerts no direct influence upon the brain, and the pupil is not affected by it, except it be an indirect dilatation of it before death.

4. It is a spinal motor depressant (probably directly so) producing death by paralysis of the respiratory nerve centres, and is without action on the muscles or nerves.

5. It is a direct depressant to the circulation, lowering the force and rapidity of the blood streams, slowing the action of the heart, and finally affecting the force of the single beat independent of any spinal action it may exert.

Veratroidia appears to be physiolgically as well as chemically, in many respects, midway between viridia and veratria. Its influence is:—

1. Locally it is somewhat irritant.

2. It is an irritant emetic and sometimes cathartic.

3. It exerts no direct influence upon the brain or upon the pupil.

4. It is a direct spinal motor depressant, producing death by asphyxia,

and acting at the same time, to some extent, upon the conducting nerves and muscles.

5. It depresses the heart's action, both in force and frequency, but the period of depression is followed by one of reaction, its primary cardiac action being independent of its spinal influences."

Dr. Wood corroborates the statement of Charles Bullock, that the purified resin of veratrum viride has no influence on the circulation, and is probably inert.

The Half-Yearly Abstract of the Medical Sciences, being a digest of British and Continental medicine, and the progress of medicine and the collateral sciences. Edited by William Domett Stone, M.D., F.R.C.S. Vol. L. Jan., 1870. Philada.: H. C. Lea; pp. 296. Price $2.50 per annum; single volumes, $1.50.

This volume comes freighted with the usual amount of interesting observations, and among them we notice articles on chloral from Lieberich, Demarquay, Richardson, Dreulafoy and Krishaler.

The Chemists' and Druggists' Almanac and Pharmaceutical Text Book. 1870. London: "Chemist and Druggist" office, Colonial Buildings, Connar St., E. C.

This well gotten up "almanac" is received from the publishers of the Chemist and Druggist, London. It contains over 100 pages, 12mo., and is neatly bound in cloth and full of information, legal and professional, including many formulæ, a botanical calendar, and various tables. Though much of the legal information bearing on pharmaceutists applies wholly to England, there is much of a general character useful everywhere.

Braithwaite's Retrospect of Practical Medicine and Surgery. A half-yearly journal, part LX., uniform American edition. New York: Townsend & Adams, 1870; pp. 329, octavo.

This established semi-annual comes as usual full of valuable articles. Among them we notice Dr. Sansom's paper on the therapeutic properties of the *sulpho carbolates*. Dr. Fenwick's paper on calabar bean in tetanus, and Dr. Gee's paper on the physiological effects of *apomorphia* and *chlorocodide*, derivative products from morphia and codeia, by heating them in hydrochloric acid in sealed tubes.

The European Mail, a full and complete summary of home and foreign news for the United States, Canadian Dominion, &c., &c., &c. Published weekly for dispatch by the mail steamers; pp. 28, folio.

This valuable and comprehensive weekly is priced at 13 shillings sterling, with 4*s* 4*d* postage; making about five dollars subscription, postpaid.

Bowdoin Scientific Review, a fortnightly journal. No. 1, vol. 1, Feb. 15, 1870. Brunswick, Maine; pp. 16.

This new journal is edited by Professors Brackett and Goodale of Bowdoin College, and embraces several notices of valuable papers, among which that of Dr. Wier Mitchell, on the opium alkaloids, is included.

The Manufacturer and Builder for January and February is received. Each number contains 32 large quarto pages, issued monthly, containing many illustrations. Published by Western & Co., 37 Park Row, New York.

The New Jersey Pharmaceutical Association.—Just as we are closing our columns we are informed by Prof. J. M. Maisch that, at a meeting held at Newark, N. J., on the 17th and 24th of Feb., this new body was instituted, and Charles H. Dalrymple, of Morristown, elected President.

OBITUARY.

Arthur Wellesley Gabaudan, of New York, died on the 4th of January last, at the age of 57. He was a well known and able pharmaceutist, was a member of the American Pharmaceutical Association, and a Vice President of the College of Pharmacy of the City of New York.

Mr. Gabaudan was born at Pleasant Valley, Dutchess Co., New York, on the 7th of January, 1814. His father, a native of Jamaica, was of Huguenot extraction, originally from Normandie. He studied both pharmacy and medicine, but at the age of 24 devoted himself exclusively to the former profession, of which he became an eminent member. Mr. Gabaudan leaves a wife and two daughters; but probably no other circumstances than the above are of general interest. Yet to his friends other impressive recollections do occur, and although Mr. G. became prosperous during later years, he formerly met with adversity in business not easily overcome. Within a short period he lost his only remaining son, and his own death renders the family name extinct.

The following resolutions were passed by the Board of Trustees of the New York College of Pharmacy on the 6th of January:

"*Whereas*, In the death of Arthur W. Gabaudan the College sustains the loss of a valued officer, and the members of this Board an esteemed associate;

"*Be it resolved*, As a demonstration of respect, that the Trustees attend the funeral of the deceased, and invite the attendance of the Professors and members of the College;

"That the Secretary be requested to transmit to the family of Mr. Gabaudan a letter of sympathy in its great affliction;

"That an obituary *in memoriam* of Mr. Gabaudan be published in the next issues of the *Druggists' Circular* and the *American Journal of Pharmacy*, and that the Secretary enter these proceedings on the minutes of the Board."

Stephane Robinet, pharmacien, of Paris, died on the of December, in the seventy-fourth year of his age. He was born at Paris, on the 6th of December, 1796. He commenced his education in that city, but was afterwards sent by his parents to Germany, where he became master of the German language. Subsequently he applied himself to the study of pharmacy. He was a pupil of Pelletier, and afterwards of Vauquelin, in whose laboratory he finished his studies in 1814, and after his examination opened a shop in Paris, which he subsequently abandoned to devote himself entirely to science.

M. Robinet was the author of numerous papers relating to pharmacy in earlier life, and of several translations from the German. He was one of the founders of the *Journal de Chimie Medicale, de Pharmacie et de Toxicologie*, now in its 46th year. After 1836 he devoted much time to agriculture, and especially to sericulture, in its relations to science, in which he appears to have been very useful to the silk growers.

M. Robinet was an officer of the *Legion d'honneur*, a member of the Imperial Academy of Medicine, and of the Société de Pharmacie, of which he was one of the most eminent members, and of various other French and foreign learned societies. The latter part of his life, when not occupied in public matters, he devoted to the study of the waters of France, and has left an unfinished work on this subject.

As a pharmaceutist Robinet was an uncompromising enemy of empiricism; he believed that pharmacy should be practised only by those who had bought the right by primary education, examination and the diploma, but admitted, nevertheless, that a ruinous competition had forced the pharmaceutist to be a merchant to be able to live. M. Robinet was a representative man in French pharmacy; he was a delegate to and officer of all the International Pharmaceutical Congresses, being Secretary of that at Paris in 1867. As a public speaker Robinet was eloquent and dignified, with great animation; he was quick at catching the public expression, and made an excellent Secretary. His urbanity and politeness were always uppermost, and when he had to say hard things he did it in a way not to wound. It was our good fortune to receive his kind offices, on the occasion last mentioned, in various ways, and at his residence, 3 rue de l'Abbaye St. Germaine, the scene of his labors for science. During his visit to Vienna, in September last, as a delegate to the third Congress, he contracted a cold that resulted in his death.

Richard B. Giles, one of the founders of the Pharmaceutical Society of Great Britain, died on the 5th of January, at Clifton, in his 78th year, having been born on the 14th of June, 1792, at Tewkesbury. He was much esteemed by his fellow members." He had the most unbounded veneration for those who were active promoters of the establishment of the Pharmaceutical Society. He was eager to cooperate in every movement for the advancement of Pharmacy, and so late as September last took part in inaugurating a new Local Association."